

NEWS

Micro makes veterans' day

Alabama data base expected to go nationwide by year's end

By Edward Warner
CWI Staff

MONTGOMERY, Ala. — While many across the nation celebrated Veteran's Day with a holiday from work this week, hundreds of veterans in this state may have a computerized data base to thank for the fact that they have jobs.

By December, U.S. Labor Department officials expect the Alabama data base to be in nationwide service as well.

The data base, the Computerized Federal Contractor Awards Information System (CFCAIS), stores the U.S. Commerce Department's list of all businesses to receive federal contracts in Alabama and informs the Alabama Job Service, the state's job-finding agency, whenever a new federal contract is available there. A federal contract carries with it the requirement that the contractor attempt to hire Vietnam veterans or those with service-related disabilities. Alabama Job Service employees visit contractors shortly after the contract is announced to help them find suitable veterans to hire.

Before the CFCAIS came into use, state job finders in Alabama and all other states received notice of new federal contracts in their areas on a quarterly basis, causing long delays before the state could make its hire-a-vet pitch to the employer, said James C. Gates, state director for veterans employment and training. There were even instances, Gates said, where contracts were completed before the state job finders learned of them.

In the 12 months since the data base came into use in Alabama, state Job Service employees have been able to place 2,500 more veterans than the year before, Gates said, adding that "I have a feeling that this program gave some impetus to that [improvement]." The state, he said, placed 12,000 to 13,000 veterans in jobs each year.

Last month, the U.S. Labor Department gave \$24,960 to the Alabama Department of Industrial

Relations, which operates the CFCAIS, to enable it to bring the data base into nationwide use in a pilot project.

Upgrading the system for national use will require purchasing a new microcomputer with 20M bytes of storage capacity — probably an IBM Personal Computer XT — said Alabama state labor official Frank Willet. Also needed, Willet added, will be a dot matrix printer similar to the Epson America, Inc. PT-100 and a copy of Lotus Development Corp.'s Symphony integrated software package to tie it all together.

The data base is currently housed on an Addressograph-Multigraph Corp. AM 425 word processing system, a unit that incorporates a letter-quality printer that is used to generate the congratulatory form letters that the state sends to those who receive federal contracts in Alabama. The letters will not become part of the national system, however.

By December, Gates said, the CFCAIS will begin sending a weekly list of businesses within each state which have received federal contracts. The states will, in turn, refer the names to the Job Service office in the area where the firm is located. The employers will then be contacted and offered the opportunity to hire veterans, according to Gates.

Using a Hayes Computer Products, Inc. Smartmodem, CFCAIS each day downloads the department's daily list of new federal contracts onto a diskette on the AM 425 from the computers of the Commerce Department.

The congratulatory letters it sends to new federal contractors also remind the contractor of the Veterans Readjustment Assistance Act, which mandates that they make an effort to hire Vietnam veterans and tells them to expect a call from a local Job Service representative. A copy of the letter, Gates explained, is sent to the local Alabama Job Service office.

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STC revamps management, inks pact

LOUISVILLE, Colo. — Storage Technology Corp. (STC), which two weeks ago filed for bankruptcy protection (CW, Nov. 8), announced last week a management reorganization and a pact with Chemical Bank for a \$150 million line of credit that the company said will enable it to "move forward" under Chapter 11 of the Federal Bankruptcy Act reorganization.

Naim S. Awaida, brother of Chairman and Chief Executive Officer James I. Awaida, announced his resignation as president and chief operating officer. Awaida's resignation had been speculated for some time, and the firm reportedly had been actively seeking a new president. STC said James Awaida would assume the duties of chief operating officer; no one was named president.

In other changes, the company announced Howard Derby was promoted from vice-president of field engineering to vice-president of field operations, in charge of all sales and field engineering activities; company cofounder and Executive Vice-President Zoltan Herger was placed in charge of the company's optical storage business unit; and Sewell Slesak, formerly vice-president in charge of the storage tape division, was named acting head of engineering and manufacturing operations.

The line of credit from Chemical Bank is subject to court approval and would give Chemical a "superiority" claim status under bankruptcy regulations, which would place Chemical ahead of STC's unsecured creditors. STC owes more than \$200 million to unsecured creditors.

CORRECTIONS

The Nickels and Dimes column in the Computer Industry section (CW, Sept. 17) incorrectly attributed a third-quarter earnings report to Science Management Corp. Science Management recently reported second-quarter revenues of \$16.7 million, up 28% over the previous year, and a net loss of \$1.1 million, or 43 cents per share, compared with a year-earlier loss of \$175,000, or 9 cents per share.

The purchase-price for Computer Consoles, Inc. (CCI) Timeslaw in Law Office-power software was incorrectly stated (CW, Oct. 15). For the CCI Power 5/32 microcomputer, the Timeslaw package costs \$50,000, and to run on the CCI Power 5/20 and Power 5/30 machines, the Timeslaw software is priced at \$30,000.

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NEWS

Sears to fuse private lines into unified net

Major communications project to incorporate cost-effective integration of voice and data

By John De
CW Staff

ARLINGTON HEIGHTS, Ill. — Sears, Roebuck & Co. is undertaking an ambitious feat: integrating the separate private-line data communications networks operated by its five business groups into a monolithic net that will also, and more cost-effective, integrate voice and data.

Today, individual private-line networks are maintained by Sears Merchandise Group, the retail and catalog merchant; Allstate Insurance Group; Dean Witter Reynolds, Inc., a brokerage and financial services company; Coldwell Banker, a commercial and residential real estate firm; and Sears World Trade, which is involved in international merchandise trade.

In February 1983, the Corporation Network, Inc., a business unit whose basic mission is to integrate the networks of these companies to lower operating expenses and provide for new services. Eventually the centralized organization will supply the five business groups with all of their voice and data communications needs, including planning, coordination and support.

Integration in perspective

To put the integration effort into perspective, consider that next year the combined annual communications budget for the Sears' units will be more than \$300 million, according to the best estimates of Gerard R. Weis, director of data communications.

To use that budget most efficiently, the five networks will be pulled together to remove overlapping geographical coverage. "There are probably only one or more Sears stores, one or

more Allstate offices and one or more Dean Witter Reynolds offices in any given metropolitan area," Weis explained.

Addressing the data communications objectives of the project in an interview at his office here recently, Weis said the goal is to establish a backbone network through which traffic can be routed to any host processing system within the Sears family of companies.

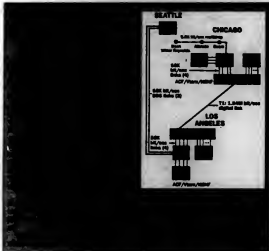
Homogeneous system

While complex and time-consuming, the integration effort will be greatly facilitated by the fact that each Sears company has IBM computer systems and networks of 3270 Binary Synchronous Communications and 3270 Synchronous Data Link Control (SDLC) terminals. Given the homogeneity of the products, the decision to go with IBM's System Network Architecture for the integrated network was straightforward, Weis said.

The network will slowly migrate to pure SDLC support because it provides for the greatest degree of facility sharing, he noted.

The integrated network will actually be a beefed-up version of the net presently serving the Sears Merchandise Group. This is the largest network in the company, used to support over 1,000 Sears stores. Six months ago Sears Communications began enhancing the net and adding additional IBM 3275 communications processors to it. Later this year the other networks will be merged with this network, a process that will extend into 1986.

Essentially, the backbone network will consist of 3725es geographically located throughout the country, connected by high-capacity lines, such



as AT&T 56K bit/sec Digital Data-Phone Service circuits or 1.54M bit/sec T1 digital facilities.

Facility type depends on traffic volume

The type of facilities used for the point-to-point links between 3725es will depend on the traffic volume between those points. "A 3725 located in Seattle," Weis noted, "may not require a T1-type facility, and we'll use multiple 56K bit/sec links for that. Other routes, such as between Chicago and Los Angeles, will be natural for T1."

There isn't enough data traffic anywhere in the network to require a direct T1 interface to a 3725, the director said. Use of these high-bandwidth facilities is dependent on the coexistence of voice traffic. "We have been calculating the aggregate capacity coming out of data and PBX equipment at a unit level and figuring out how we can meet cost-effectively the bandwidth needs," Weis explained.

The company is "not [architecturally] tied in to T1 in any way," he clarified. "We can use it where it's cost-effective or use 56K bit/sec digi-

tal facilities. This isn't a decision you can make once and not continue to look at. It depends on traffic analysis and tariffs."

Users can access any host in net

When completed, terminal users will be able to access any host processor in the integrated network through the 3725s, according to Weis.

"There is no channelization of the bandwidth that makes that happen. The terminal can logically connect, by entering a login command, to CICS in any host in the network where [the user] has authorization to do so." The Network Control Program in the 3725s establishes and controls the host sessions.

The biggest challenge in this Herculean undertaking, according to Weis, is understanding the requirements of the different business groups served. "We are not here to put together a network and then go out and convince people that they ought to use it. It's the other way around. Our mission is to understand what they need and then go out and engineer and build it."

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Sears' ambitious network plans won't carry into office

By John Hix
CWI Staff

As up-to-the-minute as Sears, Roebuck & Co.'s wide-area networking plans are, within the office, the company sees little need to adapt the communications technologies currently in vogue. It uses its telephone systems to switch calls, not data. Local networks do not give it goose bumps. And it does not have any plans to replace its terminals with personal computers.

While planning to integrate voice and data where cost-effective in the backbone network — which is being constructed by combining the five private-line networks currently operated by the Sears companies — that integration will not be extended into the office, according to Gerard R. Weis, director of data communications.

This means private branch exchanges (PBX) will not be used to support data devices. "In our case, the bulk of the data traffic is flowing through dedicated (IBM 3270) controllers; hence we haven't been very interested in hanging terminals off of PBXs," Weis said. "We don't do that at all; we just haven't had the need."

The preponderance of host-connected 3270-type displays also obviates the need for local-area networks, the director indicated. Although each of the five Sears' business groups makes its own decisions regarding local nets, Weis said he has not seen a rush to the technology. "For a business group that has a lot of 3270s, there is no obvious reason that it would want to install a local network," he said.

Local networks will become more pervasive as the number of personal computers within the organization increases, Weis said. But

the justification for these computers is based on applications rather than just as a replacement for terminals.

There has not been a "wholesale" migration away from fixed-function 3270s to personal computers," he clarified. To accommodate the few users who want to swap their 3270s for personal computers and still be able to access the network, Weis' group has published standards that specify the type of device the micro computers must emulate.

While Sears currently has little need for local networks, the company

is in need of a building wiring standard. The IBM Cabling System, which specifies how to wire buildings to provide data outlets in every office, seems to fit the bill. Weis said that the Cabling System "was something that we as customers — not just communications, but data processing too — have been looking for a long time."

Use of the Cabling System will enable Sears to wire buildings once with the assurance that it will support future products.

"Is it the best thing in the world?" Weis asked. "I don't know. Is it adequate for us to do physical planning and go off and wire new sites? Yes, it is."



Weis
CWI photo by J. Cox

Sears unit looks for network resale options

When Sears Communications Network, Inc. was formed to consolidate the private-line networks operated by the five companies within the Sears, Roebuck & Co. family, another company was formed under the group to head up a venture into the communications resale business.

Called Sears Communications Co., the basic mission of the new unit is to explore ways to resell excess corporate network capacity.

Initially, the company is focusing on reselling capacity on a satellite network serving New York, Chicago, Dallas, Atlanta, Los Angeles, San Francisco and Denver that is leased from American Satellite Co. Roy Leyton, director of marketing for the Sears Communications Co., reported that the company is already supplying dedicated voice and data channels to 34 customers through this network.

Intends to reach capacity

And while it is too early to say how, Leyton said that the company intends to resell voice and data capacity on the company's backbone network that is being built by integrating the private-line networks of the five Sears companies.

In a related matter, a group within the Sears Merchandise Group, the retail and catalog merchant, is currently involved in a test project where it is serving transaction services to Phillips Petroleum Co. in Bartlesville, Okla.

In that experiment, Sears is testing the viability of offering enhanced communications services that use its communications network and call on its transaction expertise.

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NEWS

TEMPS

from page 1

"You have to be confident . . . not a worrywart about where the next dollar is coming from. Some people have tried it and didn't like it because . . . they didn't know where their next job was going to be."

Temporary workers, or job shoppers as they call themselves, often work for temporary employment companies such as CAD/CAM Resources, Inc., a Walham, Mass., firm that specializes in the high-technology field. Kevin Jackson, president of the company, said that because of the current boom in CAD/CAM, he has more jobs available than workers to fill them.

"It's very difficult to find these people," added Robin Shaw, owner of Temco, a two-year-old Minneapolis temporary firm, who claimed his business has increased sharply compared with last year.

Shaw and other representatives of temporary firms interviewed indicated that demand for their workers is on the rise, but there apparently are no hard statistics to support their claim. The U.S. Department of Labor does not keep statistics on the number of temporary workers employed in technical fields.

Temporary assignments offer several advantages to the worker, including higher wages. Temporaries are generally paid 20% to 40% more than permanent employees, but receive fewer fringe benefits, according to several placement firms.

Shaw said that temporaries are often hired to work on challenging

product development projects. "Our people want to be where the action is," he said.

"Good people really don't like to sit on their duffs," added Tom Shaurette, president of Computerpeople, Inc., a Tampa, Fla., employment firm. "One reason temporaries are there is because something exciting is going on."

Fahnestock said, "Anyone in the engineering field likes a challenge, and when there's no challenge, it becomes ho-hum and you have a lack of interest in your work."

Jerre Annis is a programmer who, 14 years ago, quit his job as manager of a county government DP shop to work as a job shopper for Computerpeople. "The big advantage I've found is an opportunity to get exposure to different kinds of systems," Annis said. "The biggest disadvantage is having to learn the ropes in a new facility."

Temporaries said they also like not being subjected to the office politics that are sometimes a part of permanent employment.

Fahnestock cited office politics and a lack of advancement opportunities as reasons why he quit his job as an engineering aid in 1966 to try temporary work. "I was going nowhere there, and I didn't like playing kias-up to the boss, so I left."

Shaw noted that many younger employees work temporarily to shop around for a prospective employer. "They want to have experience at different companies to see which workplace best fits their needs."

Sometimes it is the companies that

do the shopping. Oftentimes, a temporary worker will be offered a permanent job if his employer likes his work and has a job opening.

Fahnestock said Martin Marietta Corp. in Denver has twice asked him to stay on as a permanent employee after his temporary assignments ended. He declined both times, but said such offers "make you feel like you've really done a good job."

Ted Widor, drafting manager for GTE Corp.'s Strategic Systems Division in Westbury, Mass., hires temporaries during peak work load times. He and other employers said temporaries allow them to adjust to work load fluctuations without worrying about laying off permanent employees when a job is completed. Such fluctuations are particularly characteristic of military-related business, they said.

"It doesn't pay to bring [perma-

nent workers] in for a short time and then lay them off," CAD/CAM Resource's Jackson said. "It's just bad business."

While temporaries listed numerous benefits to their work, they also noted some drawbacks. "Sometimes, shoppers get into a company, and the [permanent employees] look down on them," Fahnestock said. "I guess it's because they know the shoppers are making more money than they are. They forget the shopper's job may last only six months and then he's out on the street."

The transient nature of their work lives means temporaries are often saying farewell to their coworkers.

"Some shoppers don't admit it," Fahnestock said, "but after you're on a job for a while, it's kind of hard to leave. You build up a lot of good relationships with the people you work with. It's kind of sad."

Microsoft adds IBM-compatible network software, MS-DOS 3.1

By Eric Bender
CWI Staff

BELLEVUE, Wash. — Offering personal computer networking software compatible with IBM's PC Network, Microsoft Corp. last week announced and began shipping its Microsoft Networks package and MS-DOS 3.1.

The two products — network operating software and the latest version of the nearly ubiquitous MS-DOS operating system, complete with networking hooks — will allow independent software vendors to write one version of their packages that will run on various networks, the company said last week.

According to Microsoft, most important among these networks is the PC Network. The Microsoft Networks package reportedly shares the PC Network's software application interface, while MS-DOS 3.1 corresponds to IBM's PC-DOS 3.1.

Microsoft Networks 1.0 is a software package said to implement session and presentation layers on the International Standards Organization communications model — installing application packages from specific hardware configurations — and to contain a file and print server.

The software reportedly consists of redirector and server programs and associated utilities. The redirector program, installed on each personal computer on the network, captures local MS-DOS requests and forwards them to MS-DOS on a remote machine. The server application program reportedly runs on each network server, handling requests for data or shared peripherals.

Current MS-DOS applications will run and access network resources on a Microsoft Networks system without being rewritten, Microsoft said.

There are no physical or logical limits on the number of network nodes, Microsoft said. The supplier is working on extensions to the core network protocols to provide networking between MS-DOS and its Xenix operating system.

MS-DOS 3.1, required to support Microsoft Networks, is fully upward-compatible with MS-DOS 2.0 and 2.1, the company said. MS-DOS 3.1 reportedly provides an expanded file-

naming structure that includes the name of the computer on which the file resides and manages files that are simultaneously shared among applications.

The network software announcement drew immediate support from the following system and network vendors: Digital Equipment Corp.; Zenith Data Systems; Hewlett-Packard Co.; Intel Corp.; Applied Computer Technologies; North Star Computers, Inc.; Corona Data Systems, Inc.; Corvus Systems, Inc.; 3Com Corp.; Nistar Systems, Inc.; Davong Systems, Inc.; AST Research, Inc.; Proteon Associates, Inc.; Ungermann-Bass, Inc.; Western Digital Corp.; Tecmar, Inc.; Orckid Technology, Inc.; and Interlan, Inc.

"We see it as an emerging standard, and we want to follow that standard," said Ron Kasik, director of systems software at Zenith Data Systems in Glenview, Ill.

Other vendors and analysts generally agreed that they expect widespread adoption of the network software. However, many were surprised that Microsoft Networks calls for a dedicated network server, while some pointed to other limitations.

"Microsoft Networks requires a dedicated server, and the PC Network does not," noted Craig Burton, marketing director at Novell Inc., an Orem, Utah-based supplier of networking software. Burton said the Microsoft product also lacks "the sophisticated error recovery and the other functionality IBM put in."

Microsoft Networks "will be a big factor in getting a lot more software applications," predicted Buck Gee, president of Santa Clara, Calif.-based Software Connections, which sells network applications. However, he described it as "a minimal network operating system."

The setup requires dedicated servers because MS-DOS 3.1 is a single-tasking operating system, according to Microsoft. "Right now, a non-dedicated server probably would have marginal performance," a company spokesman said. "In a multitasking environment, that issue goes away."

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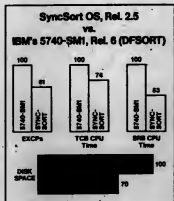
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NEWS

GM from page 1

who wishes to continue working for the automaker. He said EDS has already hired a number of contractors who expressed interest in joining the company.

"It will probably be a year before there is any significant reduction in the use of outside contractors," Riedlinger said. "But no one will be put out of a job. We will offer employment to any of those people [personnel agencies] want to release and to any individual who wants to come to EDS. But over the long haul, it is our intention to eliminate the contractors the agencies are providing to GM."

An "artificial" situation

Riedlinger described GM's extensive use of contractors as an "artificial" situation, stemming from the automaker's self-imposed head-count restrictions that resulted from a hiring freeze instituted several years ago. "EDS has never relied on outside [personnel] vendors," he said. "It is our style to provide services to our customers, including GM, directly through full-time employees who are committed to the same goals and objectives that EDS is."

Contractors' concerns about job security apparently stemmed from what Riedlinger characterized as an "offhand" remark made by an EDS employee during one of the company's more than 100 transition meetings with GM DP personnel. Asked about EDS' attitude regarding contractors, the representative responded, "The use of outside [personnel]

vendors is like dope — once you get hooked on them, it's hard to quit."

"That meeting in July, which was attended by about 125 people, was only open to GM employees — contractors were not supposed to be present," Riedlinger said. "But a bunch of contract employees came to the meeting anyway and they started asking questions that we were not prepared to answer. It was an offhand remark made by an EDS employee on the spur of the moment in response to a question he thought came from a GM employee."

But one GM contractor, who asked not to be identified, said the remark was indicative of EDS' "gunslinger" approach to the contractor issue. "There are lots of ways to handle a conversion," the worker said, "but this is something else. Their approach to us was not at all friendly. They really started off on the wrong foot with all that hot and heavy stuff about dope."

According to Judy Daniels, president of the Lansing, Mich.-based personnel firm Human Resources Unlimited, Inc., many of the 30 data processing contract workers her agency had placed with GM's Oldsmobile facility in Lansing were concerned

about the EDS takeover.

"I received quite a few calls from our contract people. They thought they were going to be out the door the very next week," she said. "It was very hard for them to separate fact from fiction. Although a number of them were later offered positions with EDS, they were hesitant to go because

'Over the long haul, it is our intention to eliminate the contractors the agencies are providing to [General Motors].'

— Ken Riedlinger, senior vice-president, Electronic Data Systems Corp.

the whole thing was handled so poorly." Daniels said EDS had offered a three-year contract to her agency to continue supplying contract workers a proposal that seems to contradict Riedlinger's one-year timetable

for the replacement of those GM workers. Albert Schornberg, president of Analytical Technologies, Inc., a Birmingham, Mich.-based personnel firm that currently supplies about 75 contract workers to GM's Oldsmobile and Chevrolet divisions, said EDS informed his agency that it would need those workers for between two and three years.

According to Schornberg, the salaries of the contract workers his firm has placed with GM have ranged from \$22,000 to as much as \$50,000 annually. He said EDS had approached him in an effort to recruit some of the contract workers as EDS employees, but his firm declined the offer.

"Anytime there is a major change like this, it causes concern among the workers," Schornberg said. "But [EDS'] relationship with us has been straightforward. They explained exactly what they wanted to do, and that was very helpful."

NIXDORF from page 1

8890 models are field-upgradable, the firm said.

The Model 12 can accommodate up to 2M bytes of main memory and up to 32 local or remote workstations. It offers an internal performance roughly equal to that of the older entry-level 8890 Model 10. The Model 10 supports 1M byte of main memory. A basic Model 12 configuration including the CPU, console and 1M byte of main memory costs \$28,750, the vendor said.

The Model 32 can support from 2M to 4M bytes of main memory — twice as much as the Model 30 — and can support up to 96 local or remote workstations. The Model 32 is said to offer roughly the same internal performance as the Model 30. A basic configuration of the Model 32 including the processor, console and 2M bytes of main memory costs \$46,500, the vendor said.

The Model 52 offers from 2M to 6M bytes of main memory and, like the Model 32, can support up to 96 local or remote workstations. The Model 52 can also support up to four system printers. The unit offers about the same performance as the current Model 50. The Model 50, however, offers a maximum main memory capacity of 4M bytes. A basic Model 52 configuration including the CPU, console and 2M bytes of main memory costs \$53,500, the company said.

Topping off the 8890 line, the Model 72 is said to offer from 4M to 8M bytes of main memory and about the same internal performance as the 8890 Model 70. Like the Model 52, the Model 72 supports up to 96 workstations and four system printers. A basic configuration including CPU, console and 4M bytes of main memory

costs \$85,500, the vendor said.

The 8890 line can use Nixdorf's Nidov/VSE operating system as well as IBM's DOS/VSE, DCOS/VSE-SP, SSX/VSE and VM/SP operating systems, a spokeswoman said.

In addition, Nixdorf said, it plans to offer a preconfigured version of its 8890 Model 10 processor for distributed processing and networking applications. Called the 8890/CP, the unit includes 1M byte of main memory and integrated adapters for peripheral devices, including terminals, disk drives, printers, communications lines and tape subsystems.

The 8890/CP includes four of the company's 8275 CRT terminals. The vendor said the unit can be expanded to support 16 terminals. A streaming tape drive with a 1,600 bit/in. recording density and a data transfer rate of 20K byte/sec in a start-stop mode and 160K byte/sec in a streaming mode is also included.

A steel barrel printer that operates at 300 line/min is standard on the 8890/CP. Printers that operate at 600 or 1,200 line/min can also be used with the 8890/CP, the vendor said. Four communications lines are included with the 8890/CP, as are two 129M-byte fixed-media disk drives. The disk drives are equivalent to IBM's 3310 disk drives, the vendor said.

Software included with the 8890/CP includes Nixdorf's Nidov/VSE operating system, an Ansi 74 Cobol compiler, an installation tool for tailoring the system to the user's application and a transaction control program.

The 8890/CP costs \$99,950. It and the other newly announced 8890 models are available immediately. Nixdorf Computer is located at 300 Third Ave., Waltham, Mass. 02154.

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GM employees win some, lose some in transfer to EDS

By John DeStefano
CN Staff

DETROIT — Ten thousand General Motors Corp. data processing employees who will soon be transferred to its newly acquired subsidiary, Electronic Data Systems Corp. (EDS) will enjoy a generous stock bonus award, but will lose such benefits as overtime pay, cost-of-living allowances and retiree health insurance.

In a transition plan presented to GM DP workers on Nov. 1, EDS announced that it intends to continue paying the employees' current salaries, including a final cost-of-living allowance that will be rolled into the workers' base pay at the end of the year. GM's U.S. employees will officially become members of EDS' work force on Jan. 1, following stockholder approval in mid-October of the auto giant's \$2.5 billion takeover of EDS. Workers in GM plants outside the U.S. will be added to the EDS payroll during the next six months, according to EDS Senior Vice-President Ken Riedlinger.

Riedlinger said the GM workers transferred to EDS will receive between 100 and 1,000 shares of GM Class E stock, a new stock class that resulted from the merger, at 5 cents a share. The number of shares each employee receives reportedly will be based on the worker's age and number of years of service. With a market value of \$46.25 as of Nov. 5, the stock award would be worth between \$4,625 and \$46,250. EDS said the total number of shares to be awarded will be between 2.25 million and 3 million. The award is intended as a one-time bonus, although the GM employees will be eligible for future stock awards based on performance.

Workers excited, but concerned

GM DP workers interviewed by *Computerworld* following the announcement of the transition plan said they were excited about what they considered to be the lucrative stock award, but were concerned about the loss of overtime pay, cost-of-living allowances and health insurance after retirement.

A GM spokesman said last week that about 95% of GM's 126,000 white-collar workers each receive a total of some \$6,000 annually in quarterly cost-of-living allowances. Despite employee concerns, Riedlinger said, EDS' merit increases, which he said are paid more frequently than is the practice at GM, will more than compensate for the loss of cost-of-living allowances.

"People have tended to discuss only one side of this change — the loss of some benefits," Riedlinger said. "EDS merit raises average less than a year apart, and the average merit raise is 11%. The average merit raise at GM is only 3%, and it occurs no more frequently than once a year. If you take a [cost-of-living allowance] plus a 3% maximum merit raise and compare that with EDS' average, the EDS system is obviously going to be putting more money in the hands of GM employees than the GM system they say they want to keep."

Riedlinger conceded that EDS does not provide health insurance coverage for retired employees, but he said that was because the company "had not had that many people retire."

"We are a young company, and we

haven't really faced that issue," he explained. "But I don't think there is a company in the world that pays greater attention to the needs of its employees than EDS. We take care of every legitimate employee need, and retiree health insurance is something that could be considered in the future."

Riedlinger said that in situations covered by federal law, EDS will continue to reimburse GM employees for overtime work, but that EDS does not embrace the practice of paying overtime wages to its salaried employees.

"Between now and Jan. 1, we will identify those overtime-related situations where we have to do one of three things," he explained. "We will

either hire additional people to alleviate any work load problem, make a salary adjustment to any person who must work overtime or cover the situation through performance bonuses."

On the topic of worker relocation, he said no GM worker will be forced to transfer against his will. But EDS' philosophy is that advancement opportunities — and the salary increases that go with them — go to workers who are willing to transfer.

"When you have a company that is growing like we are, there are lots of opportunities all over the place," an EDS spokesman said. "Employees are asked if they would like to participate, and if they do not, there is no

black mark placed against them. But if they choose to stay in one geographic location, they will be limited in the number of opportunities they are afforded."

One GM employee, who asked not to be named, said many workers are angry about the changes. "Although most of the ambiguity is gone now, people are generally pretty mad. The attitude is that GM sold us out. . . . The retirement health care cancellation is probably the single biggest issue here. We hired on with GM with the understanding that we had those excellent retirement benefits, and a lot of people stayed on with GM because of them. A lot of people are dismayed."



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NEWS

Tandy chief ponders micro market's future



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ANAHEIM, Calif. — Which companies will survive the microcomputer shakeout? Who will determine how business microcomputers are used? Do multiterminal micros have a future?

These questions and other issues were addressed by John V. Roach, president of Tandy Corp., in his keynote speech at the Data Processing Management Association's (DPMA) annual conference here last week. Among his comments were:

■ Which companies will survive the microcomputer shakeout? The deciding factor will not be technology, Roach said. "IBM proved a long time ago that distribution is more important than products or technology."

■ With increasing compe-

'If the computer professional is willing to accept micros as a serious alternative, [he] will control the system.' — John V. Roach, Tandy Corp.

tition among companies, hardware manufacturers are "playing in a whole new ballgame" with regard to price, performance and after-the-sale support, he noted.

■ Users will continue to benefit as the price/performance ratio of micros continues to improve, but some companies are shortchanging users on support, Roach added. "Many manufacturers are not providing the level of service and support they should."

■ The introduction of microcomputers to the business world has ensured that the "office of the future" will arrive sooner than many observers expected, he said.

■ Networked micros would emerge as the winner in the battle between networks and multiterminal systems, Roach predicted.

Although a multiterminal system has advantages in certain situations, microcomputer companies are adding features, such as graphics capabilities, that will make the machines more attractive to users. "Dumb terminals don't support graphics," he said, "and users are beginning to expect graphics-oriented systems."

Price will also be a factor. "The cost of microcomputers is approaching the cost of dumb terminals," he noted.

"That will reduce the multiterminal advantage."

In the future, multiterminal microcomputers will "simply become an adjunct to a network of personal computers in an office," he said, adding that a variety of networking schemes will be available.

■ Who will determine how micros will be used — the DP manager or the end

user? That depends on whether the DP department recognizes the importance of the technology, Roach said.

"If the computer professional is willing to accept microcomputers as a serious alternative, [he] will control the system," he explained.

"But if [he] refuses to recognize the just place of micros, the users will attempt to con-

trol the systems, because they must have the productivity gains made possible by microcomputer technology."

■ Don't wait for the perfect system, Roach warned. Instead, look for a system that answers most of your organization's needs and, at the same time, leave room to integrate new technologies as they emerge.

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NEWS

Data processing to expand role via micro integration

DP managers anticipate corporate personal computing to relieve applications backlog



By Kathleen Sullivan
CW West Coast Bureau

ANAHEIM, Calif. — Will the introduction of personal computers into the corporate environment help chip away at the applications backlog that has been steadily accumulating in data processing departments?

In interviews with DP managers here at last week's Data Processing Management Association (DPM) annual conference, most respondents answered that question with a qualified "yes."

Personal computers will be used to meet many of the post-up needs of users for applications programs, they said.

At the same time, however, personal computer users represent a new breed of users and they are placing new demands on the data processing staff.

Quicker response to users

James Boone, manager of data processing at Compressor Systems, Inc., a Midland, Texas-based company that manufactures natural gas compressors, said personal computers will help managers respond more

quickly to many user's applications requests.

In addition, personal computers will help users devise some new solutions to some old problems.

"We have the ability to do things with microcomputers that we couldn't have done with a main-

frame, such as remote billing," Boone said. "But at the same time, we want to integrate those systems into our information gathering process. So we are taking on a new job: making personal computers fit into the traditional data processing department."

Dan Shirley, director of information services for Perkins-Prothro Co., an independent oil and gas producer based in Wichita Falls, Texas, agreed, saying that personal computers had added an "entirely new spectrum" to the work of data processing managers.

"We are no longer just managers of people who write programs and collect data," Shirley said. "We have become the group that understands the information flow in a company."

Personal computers are introducing computing to a new audience of

'We are taking on a new job: making personal computers fit into the traditional DP department.'

—James Boone, DP manager at Compressor Systems, Inc.

that in the short run, personal computers would increase the work load of the data processing staff, because microcomputer users "require an extremely personal form of system development."

Aldridge's department now performs hardware and software evaluation for its personal computer users, in addition to maintenance and support. The city's information services department reassigned personnel to handle microcomputer support, he said.

H. Faye Booker, supervisor of systems analysis and programming at the U.S. government's Postal Data Center in St. Louis, said her agency was just beginning to use personal computers.

Because the agency's data processing staff spends much of its time

users, Shirley said. "People traditionally resistant to computers are now eager to automate their departments with microcomputers."

Shirley said, John C. Aldridge, manager of the information services department for the city of Lub-

bock, Texas, said that in the short run, personal computers would increase the work load of the data processing staff, because microcomputer users "require an extremely personal form of system development."

Aldridge's department now performs hardware and software evaluation for its personal computer users, in addition to maintenance and support. The city's information services department reassigned personnel to handle microcomputer support, he said.

H. Faye Booker, supervisor of systems analysis and programming at the U.S. government's Postal Data Center in St. Louis, said her agency was just beginning to use personal computers.

Because the agency's data processing staff spends much of its time

maintaining its large systems, it has trouble meeting the needs of users, she said.

Booker said microcomputers will give users the ability to produce their own reports, which will help reduce the work load of the agency's systems and programming area.

The Postal Data Center will rely on a personal computer coordinator to handle microcomputer support, she said.

James J. Kilian, data processing manager of Templeton Kenly & Co., a Bensenville, Ill.-based manufacturer of heavy lifting equipment, said his company was also a newcomer to personal computing.

The company, which had been looking for a mainframe data base package to keep track of its fixed assets, recently decided to use a personal computer data base package instead of the mainframe one, according to Kilian.

Richard P. Gehrt, who is in charge of processing services for Employers Insurance of Wausau (Ei), said his company is using personal computers in a variety of small, independent applications areas.

When asked if he thought microcomputers would help cut into the applications backlog, according to Gehrt, "I should hope so. If they don't, we really have a problem on our hands."

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NEWS

Networks won't become obsolete, consultant assures



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**By Kathleen Sullivan
CW West Coast Bureau**

ANAHEIM, Calif. — Is your company grappling with the issues related to installing a local-area network? If so, Linda T. Taylor, vice-president of Gaskell & Taylor Engineering, Inc., a Los Angeles-based consulting firm, offers some reassuring words.

"No matter what system you choose," she told a seminar audience at last week's Data Processing Management Association's (DPMA) annual meeting, "it won't become a throw-away system." Whatever a firm decides to use today will be usable in the future as a component of a larger system, she added.

Networks available today will become obsolete tomorrow only if the local-area network manufacturer decides to stop supporting its products, Taylor said. "Networks will not become obsolete just because something slicker comes out on the market," she said.

However, there are some penalties users will incur when they link their present networks with later versions, Taylor said. The system will take longer to respond, she warned, and its increased complexity means problems will be harder to diagnose. In addition, a higher level of expertise will be required to support the system, and it will be more expensive to maintain, she said.

For some users, the most pressing question is whether their organization should install a local-area network or a private branch exchange (PBX), Taylor said.

Taylor said local-area networks provide an "inexpensive entry into office automation," are relatively simple to install and can be easily expanded.

In addition, most local-area networks include electronic mail and print-spooling capabilities and provide a hard disk capacity of between 10M and 255M bytes, she said.

What are the disadvantages of these networks? At present, they can only handle data transmission, Taylor noted. Coaxial cable is not only expensive, but it also requires a conduit in the walls, she said.

According to Taylor, too many protocols and standards are being worked on by various standardization groups. Thus, incompatibility remains a problem. And finally, gateways — protocol converters that link dissimilar networks — have been slow in coming to the market and are expensive as well, she said.

A PBX system offers several advantages, Taylor said. Fourth-generation PBXs, which integrate voice, data and facsimile transmission, are already on the way, she noted, and offer a "great deal of intelligence and features."

Users will be able to get those features in a single desktop unit that will combine the functions of the terminal and telephone.

In addition, PBXs use twisted-pair copper wire, which is relatively inexpensive, Taylor said.

Networks available today will become obsolete tomorrow only if the local-area network manufacturer decides to stop supporting its products. 'Networks will not become obsolete just because something slicker comes out on the market.'

— Linda Taylor, Gaskell & Taylor Engineering, Inc.

PBXs have other shortcomings, Taylor said. For instance, second-generation PBXs, using a blocking architecture, can "busy out" users.

Although third-generation PBXs were announced three years ago, few products have arrived on the market, Taylor said. And vendors have pro-

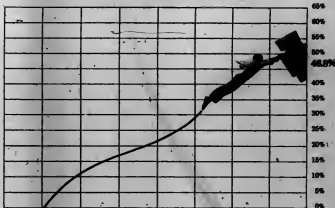
¹Provided only limited software capabilities for PBXs.

Eventually, Taylor said, the terms local-area network and PBX will disappear as the products converge into a single communications technology.

But Taylor said PBXs are not yet a "mature technology" and told users to wait another year and a half to two years before purchasing one.

"If you don't need to install a network right away, delay the decision at least eight months, until the next National Computer Conference," Taylor said, adding that she expects several product announcements at that show next July.

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*On-Line Systems prepared a questionnaire for all health-care cases that was distributed under the control of Ernst & Whinney, one of the Manhattan-based public accounting firms, who then received the questionnaires and completed and tabulated the responses. Respondents were asked, among other things, how they stored the tapes and during a C.I.C. application whether the law firm would be using health-care. According to the results tabulated by Ernst & Whinney, some claim it would take an average of 10.2 hours.

¹²Thompson, December 1998 letter.

NEWS

FBI seeks OK for white-collar crime suspect data base

By Bryan Wilkins
CN Washington Bureau

WASHINGTON, D.C. — The Federal Bureau of Investigation is proposing to expand its National Crime Information Center (NCIC) data base with a new file of white-collar criminal suspects, including pertinent information regarding investigations of financial crime.

The FBI's Criminal Investigative Division, which initiated the request to have the NCIC establish a so-called economic crime index (ECI), said there was a "need for more efficient and effective fieldwide coordination of major white-collar crime investigations."

"Because of a lack of coordination," FBI state law enforcement and other regulatory agencies now frequently initiate their own cases that involve the same fraud scheme.

Jerry Berman, legislative counsel to the American Civil Liberties Union said the proposed ECI "raises significant privacy concerns. We've said many times that no new files should be added to the NCIC without specific legislative authorization that deals with automation and standards for the data."

Berman added, "We're at the point where either NCIC becomes a system of accurate records — right now it is 50% inaccurate on the average — or Congress should discontinue funding, because [NCIC] continues to disseminate inaccurate information."

The Advisory Policy Board of the NCIC last month recommended that the ECI plan be approved. Attorney General William French Smith and FBI Director William Webster must first approve the plan, which the FBI is seeking to finalize by mid-1985.

The ECI plan has caused the chairman of the House Judiciary Committee's Subcommittee on Civil and Constitutional Rights, Rep. Don Edwards (D-Calif.), to write a letter to Webster and Smith questioning both the establishment of the file without formal congressional approval and the methods by which the information in the proposed index would be verified and updated.

Additionally, last month Edwards accused the FBI of "appearing to violate" the Federal Advisory Committee Act by barring a subcommittee counsel from attending sessions of the Planning and Evaluation Subcommittee of the NCIC's Advisory Policy Board. The counsel had attended similar board meetings in the past. The FBI said the decision not to allow John Briley, the counsel, to attend was "based on sound legal precedent."

The FBI has not responded to Edwards' accusations, according to a subcommittee spokesman. The Advisory Policy Board meetings were open to the public.

The FBI's plan would initially make the index available only to 11 FBI field offices and the Department

of Justice. But within two years, approximately 64,000 federal, state and local law enforcement agencies now using the NCIC would have on-line access to the ECI file.

The ECI file would, according to plans, automatically determine whether the subject is already on any of the other 12 files maintained by NCIC. The file would include names, aliases, associates, telephone numbers, vehicle data, business phones, bank account numbers and miscellaneous information.

Congressional concern over the creation of a new file for the NCIC is not new. Last year, the FBI dropped plans to create a suspect file on terrorists and organized crime after objections were raised.

The oversight committees of Congress have questioned the methods of NCIC users to upgrade the accuracy of the files on individuals after their cases have been disposed with by the justice system. The data accuracy issue has been acknowledged by top FBI officials.

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NEWS



**WASHINGTON
UPDATE**
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IRS rules limit home micro business tax deductions

WASHINGTON, D.C. — The Internal Revenue Service recently issued temporary rules limiting the availability of business tax deductions and credits for home personal computers.

The Tax Reform Act of 1984 (CJ, July 2) states that business depreciation and investment tax credit benefits are permitted only if the personal computer is required for employment and is used at least 50% of the time for business. The temporary regulations, published last month, apply to all computers and peripheral equipment used outside a regular place of business, the IRS said.

To obtain business tax write-offs, the taxpayer must keep a log showing how much time the personal computer was used for business purposes.

"Each entry in the log, journal, diary or similar record shall be made at or near to the time the listed property is actually used," the IRS rules said.

GSA offers federal agencies help with planning, analysis

WASHINGTON, D.C. — The U.S.

General Services Administration (GSA) recently announced a program in which the GSA's Office of Information Resource Management will provide planning assistance for other federal information management offices.

Sally Bennett, a planning specialist, said the office has prepared a booklet offering a "cookbook" approach to strategic planning and also offers on-site analysis for strategic, long-range and tactical planning.

Frank J. Carr, assistant GSA administrator, said the planning support program can be used to produce a basic plan, procedures to carry it out and a management system to sustain it. The GSA planning service is available on a cost-reimbursable basis, he said.

Carr said the planning procedure was developed and used by the GSA itself and subsequently was used by the Federal Aviation Administration, the Indian Health Service and the Bureau of Land Management.

Census Bureau to launch first count of U.S. robots

WASHINGTON, D.C. — Starting in January, the U.S. Bureau of the Census plans to count, for the first time, the growing population of robots in the U.S.

The first annual robot census survey will be mailed to about 100 robot manufacturers, which will be required by law to provide information about their 1984 products. It will be the first time the bureau's Current Industrial Report series will specifi-

cally cover robots, bureau officials said.

"The results of this survey will provide policymakers with an information base to assess the impact of the growth of robotics on our economy," the bureau said. "Data will be used in making trend projections, market analysis, product planning and so forth," it added.

More computer filing urged in Medicaid, Medicare claims

WASHINGTON, D.C. — The federal government should encourage hospitals and other health care providers to make greater use of computer media when filing Medicare and Medicaid claims, according to a new report from the U.S. Department of

Health and Human Services.

Richard F. Kueserow, the agency's inspector general, said the Health Care Financing Administration (HCFA) could save an estimated \$197 million a year with maximum use of "electronic media claims" such as magnetic tapes or disks or data communications. The report said the savings would result primarily from eliminating data entry costs.

Kueserow's report noted that the HCFA already supports the use of electronic filing by the health care industry, but said it needs to remove certain deterrents and especially encourage the use of electronic media by high-volume filers.

The report added that when replacing the paper forms with electronic filing, it is important to establish a reliable audit trail that permits prosecution of fraudulent claims.

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By James Connolly

CI Staff

BAYWARD, Calif. — The trial judge, citing the jury's "passion," has reduced the punitive damages assessed against MDS Qantel, Inc. from \$10 million to \$1.6 million in a case involving a fraud complaint brought by a former distributor of Qantel products.

The distributor, Datapro Corp. of Detroit, recently accepted Alameda Superior Court Judge M.O. Sabraw's suggestion that \$1.6 million in punitive damages is sufficient. Datapro's option was to retry the case, decided by a jury here in August, before a new jury on the question of punitive damages. Judge Sabraw let stand \$2.69 million in actual damages that the jury said Datapro suffered.

In reducing the jury's punitive damage award, Judge Sabraw said it had been "at least suggestive of passion and prejudice."

Datapro to appeal

John C. Walters, senior vice-president for legal affairs of Mohawk Data Sciences Corp., Qantel's parent company, said, "We are pleased that the jury's punitive damage award in this matter, which we believe to have been totally irresponsible and unsupported, has been drastically reduced by the judge. At the same time, we continue to believe that there is no factual or legal basis for the original award made in favor of the defen-

dant [Datapro] in this action and we expect to appeal this matter in order to have the entire jury verdict reversed."

The case centered on Datapro's claim that Qantel's Solutions accounting software and other products were defective and that Qantel deceived distributors. Datapro attorney Thomas Christo claimed that Qantel "used the distributors as a shield while its products were defective." He said Qantel had planned to direct-market its products after the defects were removed.

Christo noted that his motion to have Qantel pay \$3 million in interest and fees is still pending before Judge Sabraw.

Qantel had brought an initial suit in 1982, and Datapro filed a fraud counterclaim. Qantel won a \$240,000 settlement on its original breach of contract claim. That settlement and any interest and legal fees that Qantel is awarded will be subtracted from the \$4.3 million that Datapro won.

The California case is the second multimillion dollar setback for Qantel. In July, a federal appeals court in Boston upheld a \$6 million contract fraud judgment won by a former Qantel distributor. That award to Computer System Engineering, Inc. of Burlington, Mass., included \$2.3 million in actual damages, \$2.3 million in punitive damages and \$287,000 in legal fees.

NEWS

AT&T suggests rate hike; contingent on FCC action

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — While claiming it would prefer not to raise its rates, AT&T last week said it may nonetheless have to do so should the Federal Communications Commission grant rate increases proposed by local telephone companies. The AT&T comment came in the wake of the local phone companies' proposal to charge more for access to AT&T's Message Toll Service (MTS), WATS and competing long-distance services beginning Dec. 1.

Meanwhile, a spokesman for MCI Telecommunications Corp. said his company will absorb the increase if it is granted.

The proposed rates would add about 6.6% to the premium access fee levied on AT&T and about 6.8% to the access fees paid by other common carriers.

The tariff containing the proposed charges was filed Oct. 17 by the National Exchange Carriers Association (Neca), which represents the bulk of the nation's local exchange carriers. However, at least one carrier — United Telephone System — will file a separate tariff and has already announced it will charge less than Neca has proposed.

Separate access tariffs also may be filed by a number of other local carriers, including GTE Corp. and the divested Bell operating companies serving the mid-

Atlantic states, the West Coast and much of the Midwest.

A few days after Neca's tariff revisions reached the commission, MCI asked the commission to reject the filing. On Nov. 1, MCI was joined by two groups representing corporate communications users and by AT&T. AT&T asked the commission

to suspend the higher rates for up to five months.

Last May, when the FCC authorized the present rates for local access to MTS, WATS and the switched public long-distance services provided by the other common carriers, the commission said local carriers were entitled to a 12.75% rate of return. However, in a statement accom-

panying its Oct. 17 filing, Neca told the commission that the proposed rates were that time have not produced the prescribed level of earnings. The association added that the proposed rates were designed to eliminate the shortfall; they will increase local carriers' revenue an estimated \$850 million per year.

MCI spokesman Gary Tobin said Neca's proposed rate increase, if granted, will only be temporary; a surcharge of \$1 or \$2 per month is likely to be imposed soon after on residential and single-line business users, he explained, and once that fee is in place, charges levied by local carriers on long-distance carriers will be reduced accordingly.

Linc users form group in California

SAN FRANCISCO — Users of Burroughs Corp.'s Linc language here have formed their own users group, known as Local Users of Linc and Lire (Lull). Lire is the reporting feature that comes with Linc.

According to Jan Terry, manager of systems development for Koret of North America, a subsidiary of Levi Strauss & Co., and one of the users group principals, Lull's goal is to exchange coding techniques and expertise to resolve programming problems. Although the group now consists of five companies, Terry said the group is open to all companies that use Linc to program Burroughs mainframes.

More information on the group is available from Terry at Koret of North America, 611 Mission St., San Francisco, Calif. 94105.



NEWS



TELEPHONE
CONTRACTS
 Phil Hirsch
 CW Washington Bureau

Terminal liability under AT&T debated

WASHINGTON, D.C. —

"The [divested Bell operating companies] and [AT&T Information Systems] may have agreed between themselves

that the so-called fixed-term contracts [would] be re-negotiated, but in so doing, the [divested companies] and [AT&T Information Systems] could not bind customers who were never parties to such... agreements."

So said the North American Telecommunications Association (NATA) late last month in a statement to the Federal Communications Commission; the association represents independent manufacturers of private branch

exchange, telephone and related equipment who compete with AT&T Information Systems, the telephone company's deregulated subsidiary. NATA's comment represented the latest round in an argument over terminal lease termination penalties. The specific issue is whether users who leased terminals from the divested Bell operating companies before divestiture are still liable for those charges now that ownership of the equipment has

passed to AT&T Information Systems.

The phone company insisted the original contracts were made with AT&T, even though customers dealt only with the divested Bell companies; therefore, despite divestiture, the terms remain binding. NATA argued that the agreements signed between AT&T and the Bell operating companies at divestiture "specifically provided for the transfer of Bell operating company [terminal

equipment] contracts to AT&T Information Systems."

... If the least-cost provider [equipment] contracts really did belong to AT&T prior to divestiture, there would have been no need to transfer them."

John P. Bayrel, one of NATA's attorneys, said NATA is concerned about termination charges because AT&T reportedly is waiving the charges of customers who agree to buy or lease new terminal equipment from the telephone company instead of from competing suppliers. He added that although AT&T is telling customers that they are subject to the charges, "no one has been taken to court for refusing to pay them."

Divested companies seek FCC rule waiver

WASHINGTON, D.C. —

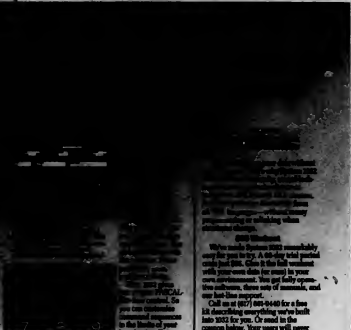
"Will the public be better off if the divested Bell operating companies are allowed to perform end-to-end protocol conversion?" New Jersey Bell Telephone Co. posed this question to the Federal Communications Commission late last month.

Along with several other divested Bell operating companies, New Jersey Bell wants the commission to waive a provision of its Second Computer Inquiry Decision; the provision bars them from performing end-to-end protocol conversion except through separate, deregulated subsidiaries. The divested companies say that if allowed to offer protocol conversion directly, as part of packetized transmission services, they will charge far less than present vendors.

The vendors — notably Tymnet, Inc., GTE Telenet Communications Corp. and Uninet Telecommunications, Inc. — insist the divested Bell companies would achieve the lower prices by using revenue earned from other services to cross-subsidize the new offerings. The International Communications Association (ICA), a corporate communications users group, has raised the same issue. ICA said the commission should establish strict accounting procedures to prevent cross-subsidization; also, competing packet network vendors should be allowed to install access concentrators in the divested Bell operating companies' central offices.

Late last month, in the final round of comments on the pending waiver petitions, the divested Bell operating companies insisted their packet nets would satisfy a presently unmet user need by offering network-based protocol conversion to those who cannot justify the cost of terminal-based converters. Tym-

See DC page 19



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See Intel at COMDEX in Booth 2167.

NEWS

DC from page 17

net Telenet and other vendors, currently offer network-based protocol conversion, admitted New Jersey Bell, but these companies serve a long-distance market, not the local market the divested Bell operating companies plan to tap.

Phone access rate-cut agreement reported

WASHINGTON, D.C. — Press reports have indicated that federal and state officials have agreed on an access charge for residential and single-line business users. Reportedly beginning next summer, these customers will pay \$1/line monthly, and a year later, the charge will increase to \$2. The new

charge is important to larger companies because once it goes into effect, their rates are likely to be reduced.

The reported access-charge agreement was worked out by an advisory group to the Federal Communications Commission known as the Federal-State Joint Board. The group is scheduled to present its official recommendation to the commission on Nov. 16th.

The reported agreement would allow local telephone

companies to reduce access charges up to 85% for a multi-line business user who had clear-cut, documented plans for bypassing his local-exchange network. It is not clear, though, whether the discounts would have to be approved by state and/or federal regulatory agencies, nor do reports indicate whether the residential and single-line business access charge would be increased after the end of the second year.

MIT names director of Athena

CAMBRIDGE, Mass. — MIT has announced that Dr. Jerome Saltzer, professor of computer science and engineering in the department of electrical engineering and computer science, has been appointed technical director for MIT's Project Athena.

According to a spokesman, Project Athena is a \$70 million experiment to determine if the computational and graphics power of microcomputers can be used to enhance the way courses are taught at MIT.

Saltzer will be responsible for the design and implementation of the computer systems environment that Project Athena will create on MIT's campus.

IEEE offers '85 catalog

SILVER SPRING, Md. — The Computer Society of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) said that its 1985 publications catalog is now available.

The catalog features 260 recent titles on a variety of subjects and applications in computer science and engineering. The 28-page publication also lists 45 of the top-selling tutorials available and nearly 60 conference records and proceedings.

The catalog is available free from the IEEE Computer Society Press, Suite 300PE, 1109 Spring St., Silver Spring, Md. 20910.

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NEWS

Computer use coming of age in medical profession

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C.— It appears that doctors are becoming converts to the computer age. The medical industry already makes extensive use of information processing technology and is now poised to introduce new data base applications software that can be commonly used

by the medical community. This was the thrust of the recent eighth annual Symposium on Computer Applications in Medical Care (SCAMC) held here. Dr. Duncan Newhauser of Case Western Reserve University in Ohio told attendees of the conference that the simple application of popular micro-computer-based decision sup-

port systems (DSS) is desperately needed for doctors. Noting that information processing is assuming an important place in medicine, Newhauser criticized the lack of computer literacy training being offered by the nation's universities.

"As far as I know, there is not one medical school that requires its students to use or

to become familiar with the computer. It is a real shame," Newhauser said.

Newhauser added that the trend toward diagnostic-related groups under recently passed laws and regulations, which are designed to control costs and to require peer group review before operations are performed, have resulted in a situation where

information technology is aimed more at the business side of medicine rather than at its practice.

"Hospitals are spending millions on [diagnostic-related group] analysis programs instead of on decision support software that will help a doctor isolate the causes of an illness," he added.

While there is a relatively small supply of efficient DSS programs for physicians, the interest doctors display in the technology is rapidly increasing, according to Dr. George Collins of Buffalo, N.Y., and a member of the American Medical Association (AMA) who also addressed the plenary SCAMC session.

Approximately one in 10 doctors currently has a micro at home. Two in 10 have them in their offices, while micros are easily available in a hospital setting, Collins quoted from an AMA survey.

DSS highlights

A exhibit floor at the SCAMC conference highlighted the rapidly growing supply of data base management system (DBMS) programs for the management of patient records, data upgrades and statistical analysis that are already available in the office environment.

In the medical profession, a DBMS program that has already attracted wide vendor support is Mumps, a general-purpose interpretive, high-level programming language.

A skeptical view of the role of computers in future medical delivery systems came from Dr. David Rodbard of the National Institutes of Health who said, "Implementation of a computerized approach almost of necessity involves factors such as patient selection, enhanced motivation of patient and staff and the placebo effect of any new or highly touted system."

Other observers noted that development of natural language and artificial intelligence-based programs to aid diagnosis will continue to be produced, but computers will most likely be used in the administration of hospitals and in the handling of patient and statistical data by clinical researchers.

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NEWS

Successful information center starts small, thinks big

Specialist says series of pilot programs paves route to full-fledged center

By Paul Gillette
CW Staff

BOSTON — To gain management approval to build a successful information center, it is necessary to start small, but have clearly defined procedures as to what is expected from both the information center staff and the end users it serves. That was the message from John Mele, product support specialist at K-Mart Apparel Corp. in North Bergen, N.J., who spoke at TSI International's Information Exchange conference held here recently.

Mele said K-Mart Apparel had successfully built its information center over the last four years by starting with pilot projects in carefully targeted areas and then expanding in scope primarily through word of mouth.

K-Mart Apparel, which does not allow its employees to use microcomputers at work, today supports more

■ Develop major operational systems in the information center.

■ Become specialists for other departmental users.

Staff selection should be a top priority, Mele said. Staff members must be patient, diplomatic, organized and possess good communication skills. They must also have a working knowledge of the business and a broad understanding of the tools to be used.

A pilot project for the fledgling information center should be identified, he said. Ideally, the project should be in an area in which automation can provide tangible and measurable benefits.

Look for a department that is swamped with work, has mostly manual systems in place and is receptive to the idea of computerization. Too many promises should not be offered at the outset, he stressed.

It is important that MIS understands and approves of the activities of the information center, Mele said. It should be emphasized that the center is working to reduce the application backlog, not to infringe upon MIS territory.

The information center initially needs a statement of purpose, he added. Some of the guidelines outlined

above can be used as a start. It should also be determined what services will be offered, what the staff requirements will be and what physical requirements are needed.

Personnel, hardware and software should be in place before the pilot project is undertaken. During the pilot phase, standards and procedures should be developed, user guides written and results of the project measured. Capacity planning and job accounting are necessary parts of the initial activities. The measurements taken at this point will help in planning future projects and further expansion.

K-Mart Apparel, which does not allow its employees to use microcomputers at work, today supports more than 100 information center users on its mainframe with a staff of five specialists.

than 100 information center users on its mainframe with a staff of five specialists. Mele outlined some dos and don'ts for companies that are planning to set up information centers.

He said an information center should:

■ Focus on developing end-user training and education programs to make users as self-sufficient as possible.

■ Provide direct support to help users code their own applications.

■ Act as a buffer to help users better define their requests to MIS.

According to Mele, an information center should not:

■ Directly maintain or support applications developed by end users.

■ Replace traditional responsibilities. The information center should not attempt to usurp MIS' traditional authority.

Users need to provide certain commitments, too, Mele stressed. Users who want to develop an application using the information center should:

■ Promise to provide the personnel and business knowledge necessary to complete a job.

■ Commit themselves to completing the required training.

■ Take responsibility for cost-justifying the effort.

■ Develop, maintain and document their applications.

■ Use the available information center software.

Users should promise not to:

■ Attempt to breach security regulations.

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BIM-SPool—DOS/VS/E POWER to Terminal Printer Spooling

Performs batch print from POWER queues, remaps and prints on 3270-type terminal printer under CICS. CRT functions may be used to view jobs or control terminal printer operation. \$600 users worldwide. \$4000 or \$200/mo.

BIM-SPool—On-line to Batch Print Spool

Used by DOS/VS(E) CICS application programs to create batch print reports. If used with BIM-SPool, reports may be queued to terminal printer. \$600 or \$40/mo.

BIM-WINDOW—VTAM Multiple Session Manager

Multiple sessions active at one VTAM 3270 terminal simultaneously. OOE: \$2000 or \$100/mo. OOE: \$2400 or \$120/mo.

BIM-SWAP—CICS BTAM Terminal Switching

Permits local BTAM 3270 CRT's to be switched between DOS CICS partitions without special hardware or extra ports. \$1600 or \$80/mo.

BIM-ODS—CICS System Status Display

Summary, detail, and analytic displays of CICS and operating system control blocks. Periodic automatic scan for CICS operational problems. OOE: \$6000 or \$300/mo. OOE: \$6000 or \$120/mo.

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BIM-MONTR—DOS/VS/E System Status and Queue Display

DOS/VS(E) system activity, performance measurement, and POWER queue and job display. \$1900 or \$54/mo.

BIM-MSRV—DOS/VS/E Library and VTAM Catalog Display

Displays structure and status in all DOS/VS(E) libraries, VSAM Catalog, Label Area, and VTAM's on CICS CRT's. \$1600 or \$80/mo.

BIM-CRIT—CRT Screen Duplication

Copies 3270 CICS output at one CRT to another concurrently for problem determination, and documentation. \$1900 or \$80/mo.

BIM-CMPVS—CICS 3270 Data Compression

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BIM-PS370—CICS/DOS CRT Screen Print Facility

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NEWS

Info center hailed as harness for corporate micro growth

By Edward Warner
CN Staff

BOSTON — Establishing a corporate information center is the largest single step a firm can take to implement microcomputers strategically, an IBM representative told a group at the East Coast Computerfaire, a personal computer show held here last week.

The information center, according to IBM Marketing Support Representative Nancy Proctor, could function as a "Computerland [store] in your organization" by distributing hardware, software and training to those who need it. It should also provide consultants to users with special applications demands and seek to learn users' needs, but should not stifle creativity, she said.

To accomplish this, Proctor added, the information center will require the commitment of the firm's top leadership. Firms must establish a line

of accountability in microcomputer implementations, she said, "so that someone is in charge of what's going on."

Currently, she observed, "If you think of how personal computing has been addressed [in your organization], you may have just thrown up your hands." The users, meanwhile, have been "going out and using their petty cash fund to buy personal computers," she said. Proctor later asked the approximately 30 attendees who heard her speak if their corporations had already established information centers. Three raised their hands.

Top managers, she continued, must show "that they believe productivity is going to be gained" by the implementation of personal computing. To illustrate, she noted that executives in her office schedule all meetings on their terminals — a system so pervasive that those who revert to paper calendars and telephones to set meetings face the

ire of their coworkers.

The information center itself should not be staffed with applications programmers, she cautioned, because they cannot talk to users. Instead, Proctor suggested hiring former teachers who, she said, do not think that any questions are dumb and "don't have to achieve [training goals] within an eight-hour time schedule."

Financial justification will need to be tied to any microcomputer implementation, she said, adding that such justification is a problem because improved information flow and decision making "have no hard dollars attached to [them]."

An alternative approach to cost justification, she said, might be to "take 5% out of their [office] budget for the year," assuming that amount to be the minimal productivity gain expected. The 5% could then be used by that office for personal computer equipment purchases.

Office systems conference set for Feb. 2-3

ATLANTA — Author and lecturer Hal B. Becker will deliver the keynote speech at the Fourth Annual Office Systems Research Conference Feb. 2-3 at the Omni International Hotel here.

Becker, a Phoenix-based information management consultant, will speak on "Artificial Intelligence: A Fourth Revolution?" His presentation will reportedly explore the early efforts in AI and the transition from expert systems to true AI.

The conference, sponsored by the Office Systems Research Association, will cover computer security, ergonomics and office systems education. Preregistration costs \$60 for members, \$85 for nonmembers. Registration at the conference costs \$70 for members, \$95 for nonmembers.

The Office Systems Research Association is located at 574 University Center, Cleveland, Ohio 44115.

Expo to explore agriculture, DP

CHICAGO — The first International Conference and Exposition on Agricultural Automation, sponsored by the Society of Manufacturing Engineers (SME) and the American Society of Agricultural Engineers (ASAE), will be held Feb. 25-28 at the Palmer House Hotel here.

Sessions will cover trends and needs in agriculture, basics of today's food system, basics of robotics as applied in agriculture, automation of food processing, control systems for water and energy management, measuring tools for agriculture and automated harvesting. Automated systems will be exhibited as well.

The registration fee is \$350 for nonmembers and \$250 for members of SME, ASAE and affiliate organizations. More information can be obtained from either SME at One SME Drive, P.O. Box 930, Dearborn, Mich. 48121; or ASAE, 2960 Niles Road, Saint Joseph, Mich. 49085.

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NEWS

Expert systems seminar set

PROVIDENCE, R.I. — CPMS Expert Systems, Inc. has announced that its seminar on expert systems is scheduled for Dec. 9-12 at the William Penn Hotel here.

The seminar is designed for MIS managers who may know of expert systems but may not understand what they encompass. Seminar chairmen are Saman Hong of RCA Corp. and Kenneth Rider of Interface Design Associates, Inc.

Prof. Herbert Simon, Nobel Prize laureate, will present a talk on the partnership of artificial intelligence and operations research and management science. Richard Cyert, former president of Carnegie-Mellon University in Pittsburgh, is scheduled to speak on AI in the corporation of the future.

The registration fee is \$950.

CPMS is located at 290 Westminister St., Providence, R.I. 02905.

Meet to discuss benefit plan DP

ORLANDO, Fla. — An educational program for those involved in employee benefit plan data processing will be held at the Buena Vista Palace here Dec. 10-12.

The 1984 EDP Institute, sponsored by the International Foundation of Employee Benefit Plans (IFEPP), will include an introduction to data processing, computer concepts and terminology, development of software, minicomputers, on-line claims adjudication, word processing, auditing DP operations, computer systems control and security, legal ramifications, evaluation and selection of hardware and using computers to communicate benefits.

Registration fees are \$430 for IFEPP members and \$495 for non-members.

More information on the employee benefit meeting is available from IFEPP, P.O. Box 69, Brookfield, Wis. 53005.

International meet to cover micro software

KAUAI, Hawaii — The International Microcomputer Industries Association will hold its International Software Update II at the Waiohai Resort here Feb. 16-20.

Targeted at executives of micro software publishing and developing firms, the conference will include sessions on international vs. domestic standards in software as well as product introduction on an international scale.

Other conference sessions will discuss international product support, success stories in international software sales, the future of silicon software and the impact of IBM's software strategy on international markets.

Scheduled speakers for the international software conference include John Elkins, vice-president of the Naisbitt Group, which performs social forecasting and was founded by John Naisbitt, author of *Megatrends*; Edward Eber, president of Ashton-Tate; Esther Dyson, president of Edventure Holdings, Inc.; and Bill Bowman, chairman of Spinnaker Software Corp.

The full conference fee including accommodations ranges from \$1,595 to \$1,795 for single occupancy; the fee without accommodations is \$995, the sponsor said.

More information can be obtained from International Microcomputer Industries Association, Suite 175, 21 Tamal Vista Blvd., Corte Madera, Calif. 94925.



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Even more important, each is built on the same foundation—our IDMS/R database. Through it, each is able to share data with every other Cullinet application. And that's something no one will appreciate as much as data processing.

By eliminating the boundaries between modules, we've eliminated the problems typically associated with applications software—duplicate data, multiple updates, file conversion and the like. The result: efficient processing throughout the company.

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Comdex/Fall '84

AMERICAN BUSINESS SYSTEMS, INC.

American Business Systems, Inc., will exhibit **Baca Bridge**, a report writer that is said to allow users to access data and transaction files in the company's **Baca** accounting modules and transfer data directly to data base, spreadsheet and graphics packages.

The product offers up to 20 columns per report, and users can screen displays and print reports up to 160 char. wide, according to the company.

Baca Bridge is available under PC-DOS. The price of the product is \$600.

American Business Systems, 3 Littleton Road, Weymouth, Mass. 01986.

ANCHOR AUTOMATION, INC.

Anchor Automation, Inc. will display its **Volkamodem 12**, an AT&T 105/112A-compatible modem designed for most computers and standard software.

Volkamodem 12 is designed for unattended 300 or 1,200 bit/sec operation and features serial modem operation, full- or half-duplex operation, automated and autoanswer, tone and pulse dialing, dial tone detect, busy detection and attendant headset jack. It costs \$299.

Anchor Automation, 6913 Volcan Ave., Van Nuys, Calif. 91406.

ANDERSON JACOBSON, INC.

Anderson Jacobson, Inc. will feature a desktop computer with one flexible disk drive and one 19M-byte hard disk drive.

The system is designed for integrated application programs written for the IBM Personal Computer XT and compatible personal computers. It is priced at \$4,995.

Among other Anderson Jacobson products that will be displayed are a security modem with computer login and two-level password security, an option board said to eliminate errors for asynchronous, full-duplex, two-way, dial-up transmissions at 4,800 bit/sec over the switched telephone network and a series of leased-line modems and multiplexers.

The AJ 1213-AIS security modem is priced at \$695. The error correction board is \$695. The statistical multiplexers range from \$1,950 to \$7,950. The leased-line modem is \$2,545 with auto-dial backup.

Anderson Jacobson, 521 Charcot Ave., San Jose, Calif. 95131.

AST RESEARCH, INC.

AST Research, Inc. will feature several new and existing products. It will unveil a single-dot board for users of Apple Computer, Inc. Apple IIe microcomputers priced at \$235.

The company will also introduce its new line of mass storage subsystems, named **Coliseum** and priced at \$7,499 with a host adapter. A micro-to-mainframe package, **3252-11**, will be displayed; it costs \$895. Also featured will be a half-card modem

called **Beach**, priced at \$549, and a monochrome display card, **Preview**, which costs \$399.

AST Research, 5121 Alton Ave., Irvine, Calif. 92714.

CAL-ABCO

Booth 1445

Cal-Abco will introduce the Legend 1380 — the latest in the company's 90 Series of dot matrix printers. IBM Personal Computer-compatible, the printer is rated at 130 char./sec and includes a 2K-byte buffer. A dip-switch panel controls several features, including condensed print, line spacing and double-strike.

The printer produces 96 downloadable characters using a nine-wire print head and 1/216 line spacing to achieve high-resolution graphics.

The Legend 1380 is priced at \$379. Cal-Abco, 6041 Verdel Ave., Woodland Hills, Calif. 91367.

CDEX CORP.

Booths W266 and W1067

Cdex Corp. will introduce two additions to its Business Application series: **Analyzing Sales Performance Using Electronic Spreadsheets** and **Building a Business Plan Using Electronic Spreadsheets**.

Each package runs on the IBM Per-

sonal Computer, Personal Computer XT, Personal Computer AT and compatibles, PCjr and Apple Computer, Inc. machines under IBM's PC-DOS, Microsoft Corp.'s MS-DOS, the UCSD P-System, Apple's Applesoft 3.3 and Applesoft and Tandy Corp. TRS-DOS operating systems.

Versions will be available for Lotus Development Corp.'s 1-2-3 and Symphony, Microsoft's Multiplan, Software Arts, Inc.'s Visicalc and Sorcim Corp.'s Supercalc. The packages, also available for the Apple IIe in versions for all of the above except 1-2-3, are priced at \$60.95.

Cdex, Suite 200, 5050 El Camino Real, Los Altos, Calif. 94022.

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Comdex/Fall '84

COMMON LANGUAGE SYSTEMS, INC.

Booth C1888

Common Language Systems, Inc. will introduce its Plain English programming language for computers operating under AT&T's Unix and Microsoft Corp.'s Xenix.

The language reportedly masks many of the technical aspects of Unix, allowing novice programmers to more easily develop applications software and enabling experienced programmers to more rapidly produce multiuser programs.

Common Language Systems will also display its version of Plain En-

glish for IBM PC-DOS and Microsoft MS-DOS-based microcomputers. The PC-DOS and MS-DOS version of Plain English is priced at \$695. The Unix/Xenix version, which supports up to eight users, costs \$1,295.

Common Language Systems, 100 E. Sycamore Ave., Metairie, La. 70001.

COMPUFO SYSTEMS, INC.

Booth E7290

Compufo Systems, Inc. will introduce the Compufo 286 16-bit multiuser business system based on the Intel Corp. 80286 microprocessor and featuring 8-bit slave processing cap-

abilities. The 286 comes standard with 512K bytes of main memory and a slave processing unit with Elag, Inc. 280 microprocessor, 64K bytes of random-access memory, one serial port, an 800K-byte 5¼-in. floppy disk drive, a 4096-byte hard disk, one parallel and one Centronics Data Computer Corp.-type printer port and four serial ports.

A four-user system costs \$9,995. Compufo Systems, 3506 Brookwater Court, Hayward, Calif. 94545.

DATACOPY CORP.

Booth E7817 (Illinois)

Datascopy Corp. will introduce its

Model 700 Word Image Processing System office image processor. The company's Word Image Processing System and Character Image Recognition software integrates word processing and data base management capabilities with an image scanner.

The system allows office workers to process images, build documents and convert images or text to standard computer code for use with word processing software. The Model 700 features electronic half-toning, image editing and character-recognition capabilities. It costs \$3,950.

Datascopy, 1215 Terra Alta Ave., Mountain View, Calif. 94043.

DIGITAL PATHWAYS, INC.

Booth E255

Digital Pathways, Inc. will introduce two software packages for the IBM Personal Computer. The Soundware series of software is said to allow an IBM Personal Computer XT to perform intelligent telephone answering and management activities and other voice communications functions. A second package, Disk Preventative Maintenance (Disk P.M.) is said to perform preventive maintenance on hard and floppy disks for IBM Personal Computers and compatible machines. Disk P.M. is priced at \$49.95, and the Soundware series is priced at \$449.

Digital Pathways, 1000 E. Mendocino Circle, Palo Alto, Calif. 94303.

EASTMAN KODAK CO.

Booth W666

Eastman Kodak Co. will introduce a line of floppy diskettes. The company will display its low-density 5¼-in. diskettes with storage capacities of 0.25M to 1M byte; its high-density 5¼-in. diskettes with storage of 1.6M or 3.2M bytes; and 3.5-in. diskettes with 0.5M bytes of storage.

The diskettes range in price from \$3.85 each for the low-density models to \$16.50 for the high-density models.

Eastman Kodak, 343 State St., Rochester, N.Y. 14650.

ERICKSON INFORMATION SYSTEMS

Booth M915

Ericson Information Systems will announce the Ero-Intelligent line of IBM Personal Computer-compatible microcomputers based on the Intel Corp. 8085 microprocessor. The product has an ergonomic design incorporating colored alphanumeric keys, nonglare monitor and an adjustable display stand.

A 12-in. monochrome or color monitor is available. Interfaces include one RS-232 serial port and one Centronics Data Computer Corp.-type parallel port.

The price for the Ero-Intelligent micro with 256K bytes of random-access memory, monochrome monitor and dual-floppy disks with 360K bytes of storage is \$3,295, the company said.

The price with 1024 bytes of hard disk storage is \$5,230, the company said.

Ericson Information Systems, P.O. Box 8522, Greenwich Office Park 1, Greenwich, Conn. 06834.

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NEWS

Comdex/Fall '84

FALCON DATA PRODUCTS, INC.
Booth 1291

Falcon Data Products, Inc. will show its Puma II terminal with a Digital Equipment Corp. VT102 emulation option. The smart terminal is based on ANSI X3.64 standards with a 14-in. screen, IBM Selectric-style keyboard correction key, 60 nonvolatile user-programmable function keys and the ability to use double-wide and double-high characters.

Puma II costs \$695.
Falcon Data Products, 1286

Laurens Station Road, Sunnyvale, Calif. 94089.

GENERAL POWER SYSTEMS
Booth 2265

General Power Systems will display its Memorygard II series of standby uninterruptible power systems. The series, said to feature 2-msec switching capabilities and internal battery times ranging from 15 to 18 minutes, includes 200W, 300W and 1-kVA models.

Pricing for the 200W model begins at \$595 and for the

300W model at \$695. Prices for the 1-kVA model begin at \$1,295.

General Power Systems, 1400 N. Baxter St., Anaheim, Calif. 92806.

GOLD STAR ELECTRONICS INTERNATIONAL, INC.
Booth 4149

Gold Star Electronics International, Inc. will introduce eight new display monitors for a variety of home, hobby and office uses. Five monochrome models range from a medium-resolution, 9-

in. amber composite signal input video display to a 12-in. amber, high-resolution (1,100 lines) transistor-transistor logic input video display.

Three color models range from a 13-in. low-resolution composite video display, to a 13-in. high-resolution (0.31mm dot pitch) model. Prices range from less than \$150 for the basic monochrome model to less than \$600 for the high-resolution color model.

Gold Star Electronics International, 1050 Mail St. W., Lyndhurst, N.J. 07071.

GRAPHIC SOFTWARE SYSTEMS, INC.
Booth B2728

Graphic Software Systems, Inc. will show its chart-making software package aimed at the large corporate market. GSS-Plotalk runs on microcomputers under IBM's PC-DOS, Microsoft Corp.'s MS-DOS and most versions of AT&T's Unix operating systems.

The software features free-format English commands to create presentation-quality charts and produce all major data representation chart types.

It requires 256K bytes of memory and needs graphic support software drivers for device independence. The software is available to OEMs and costs \$150.

Graphic Software Systems, 25117 Southeast Plwy., Milwaukie, Ore. 97070.

ISOTRON, INC.
Booth C1714

Isotron, Inc. will display two new lines of its Oblio Scientific microcomputers, the 235 series and 345 series.

Both computers utilize 514-in. hard disk technology. The 235 can accommodate from two to four users, while the 345 series is expandable to eight users.

Prices begin at \$6,695 for the two-user Model 235 G 2 and under \$10,595 for the Model 345 I.

Isotron, 140 Sherman St., Fairfield, Conn. 06430.

I² INTERFACE, INC.
Booth B7245

I² Interface, Inc. will be exhibiting five new storage products for the IBM Personal Computer and compatibles market.

IBM-formatted storage capacities of 55.7M, 87.7M and 119.7M bytes in I²'s external disk systems series include a 514-in. Winchester disk drive, controller, cabinet, power supply, I/O adapter and cable.

The Plinth10, a 514-in. half-height internal disk system, has a 10M-byte formatted storage space with a data transfer rate of 5M b/s/sec. The final product is I²TAPE, a 514-in. half-height cartridge tape system that gives the user from 10M bytes to 60M bytes of formatted storage and includes a connector, cable, Dcopy interface and host adapter.

The external disk systems range from \$5,200 to \$7,900; the Plinth10 internal disk system is \$1,095; and the I²TAPE tape system is priced at \$1,045.

I² Interface, 21101 Osborne St., Canoga Park, Calif. 91304.

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NEWS

Comdex/Fall '84

LIBERTY ELECTRONICS CO.
Booth #758M (Illinois)

Liberty Electronics Co. will introduce two graphics terminals — the Freedom 240 Graphics/Anal VDT and the Freedom 210 Graphics/Anal VDT. The Freedom 240 is Digital Equipment Corp. VT220- and VT100-compatible, and is compatible with Tektronix, Inc. 4010 and 4014 graphics terminals. The Freedom 210 is compatible with Liberty Electronics' Freedom 200 VDT and emulates the Televideo Systems, Inc. 960 and Tektronix 4010 and 4014 terminals.

Both products offer 14-in., 132-col. alphanumeric display standards and feature 655-by-288-pixel resolutions. The Freedom 240 is priced at \$1,395 and the Freedom 210 at \$1,395. Both are scheduled for limited shipment in December and general release in January.

Liberty Electronics, 625 Third St., San Francisco, Calif. 94107.

MATRA COMMUNICATION, INC.
Booth #1136

Matra Communication, Inc. will exhibit its Scanet line of executive voice and data workstations. Scanets are desktop terminals that provide access to internal or external data bases.

A Scanet model with a built-in telephone handset for simultaneous voice and data capabilities is priced at \$1,400, according to a vendor spokesman.

Matra Communication, 20705 Valley Green Drive, Cupertino, Calif. 95014.

MCBA, INC.
Booth #1111

MCBA, Inc. will feature the five nine packages in its line of manufacturing, distribution and accounting software running on the IBM Personal Computer XT under IBM's PC-DOS operating system.

The packages include accounts payable, accounts receivable, bill of materials processor, customer order processing, fixed assets and depreciation, general ledger, inventory management, payroll and purchase order and receiving.

Prices for the packages range from \$700 to \$1,500 per module, the vendor said.

MCBA, 2441 Honolulu Ave., Monterey, Calif. 91909.

NESTAR SYSTEMS, INC.
Booth #748

Nestar Systems, Inc. will demonstrate features of its local-area network products, the Plan 3000 and Plan 4000 series, which offer microcomputer, minicomputer and mainframe computer networking capabilities and include IBM's Systems Network Architecture gateway technology.

Prices of the Plan 3000 range from \$10,000 to \$15,000 and for Plan 4000 range from \$20,000 to \$40,000, according to the vendor.

The company will introduce a print server in the Plan 1000, the newest member of the Plan family, which will be driving Hewlett-Packard Co.'s laser printer and HP's Model 7550A color plotter. The price of

the Plan 1000 products will range from \$1,000 to \$3,000, and the exhibited print server costs \$1,800.

The company will also exhibit enhancements to IBM's PC Network products — Network broadband work with IBM broadband and IEEE-802 broadband-compatible nodes. The broadband network gateway hub in a six-port configuration is \$1,000.

Nestar will show its Planpak Multiuser Applications for several packages: Ashton-Tate's Dbase II; Sorcim Corp.'s Supercalc III and Superwriter; Software Connections, Inc.'s LANMail Monitor and LANDataStore, which are bundled in the Plan 3000 and Plan 4000 series; Micro

Data Base Systems' multitier MDBS III; Cosmos, Inc.'s Revelation; and Information Builders, Inc.'s PC Focus.

Nestar Systems, 2505 E. Bayshore Road, Palo Alto, Calif. 94303.

NOVELL, INC.
Booth #244

Novell, Inc. will unveil Advanced Network 1.0, said to link separate local-area networks using multiple file servers and network bridges.

Advanced Network reportedly allows simultaneous use of files from file servers on different networks, including Datapoint Corp.'s Arcnet, Corvus Systems, Inc.'s Opennet, Xerox Corp.'s Ethernet and IBM's PC

Network, among others.

The product will support workstation access to as many as eight file servers simultaneously, according to the vendor. Advanced Network is said to provide improvements in network functionality and reduced record locking. Pricing begins at \$1,400.

Novell, 1170 N. Industrial Park Drive, Orem, Utah 84057.

OKIDATA
Booth #289

Okidata will exhibit two printers, the full-color Okimate 20, and the Microline 182 dot matrix printer. The

Continued on page 32

WHAT THEY CALL A PORTABLE,
WE CALL A LOAD.

Today, almost everyone claims to have a portable computer. The problem is, almost no one does. Most portables have a separate data storage device, separate printer, separate modem, and some even require a separate monitor or bulky battery pack that can make them a liability on the road.

The Sharp PC-5000, on the other hand, is a true portable. It's a compact 16 bit, 128K microprocessor (expandable to 320K) with 192K of ROM, an 80 character display screen, removable bubble memory storage, built-in rechargeable power source and bundled software. It's also available with options like an integrated modem that lets you connect with your mainframe and an integrated correspondence-quality printer which doesn't increase the size of the system. And even with all these features, the PC-5000 fits neatly into a briefcase competitor. At a price that's lighter, too.

Of course, there's one thing about the PC-5000 that isn't small. It's working capacity. It functions as a desktop computer. And is compatible with a wide variety of MS-DOS® software.

So if you need a truly portable computer, look into the Sharp PC-5000. The one that may be the smallest, lightest—and the best value for the money. In short, a computer that will lighten your work load. Not add to it.

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SHARP

FROM SHARP MINDS
COME SHARP PRODUCTS

NEWS

Comdex/Fall '84

Continued from page 31

Okimate 20 uses a standard parallel interface and an IBM-compatible interface to emulate the machine to emulate the IBM 5251 graphics terminal.

The product is said to include a 24-element print head and works at speeds of 80 char./sec for draft type and 60 char./sec for correspondence-quality type.

The Microline 182 reportedly uses a standard Centronics Data Computer Corp. interface and works at speeds of 120 char./sec.

The Okimate 20 sells for \$268, and the Microline 182 sells for \$290, the vendor said.

Okidata, 532 Fellowship Road, Mount Laurel, N.J., 08054.

PLEXUS COMPUTERS, INC. Booth 3288

Plexus Computers, Inc. will unveil its one- to eight-user Plexus P/15 32-bit supermicrocomputer designed to run on AT&T's Unix. The P/15 features two Motorola, Inc. 68010 microprocessors, a memory capacity of up to 2M bytes and eight full-duplex serial ports for terminals or other peripherals.

The P/15 allows for up to 54M bytes of disk storage in two Winchester-type disks, plus a single 5¼-in. double-sided, double-density floppy disk, and uses standard 115-Vac power. The I/O processor handles all character I/O to and from the eight

serial ports.

The price of the P/15 is \$10,960 with 500K bytes of random-access memory and 12M bytes of Winchester disk storage, plus a 1M-byte floppy disk drive.

Plexus Computers, 3833 N. First St., San Jose, Calif. 95134.

PRENTICE-HALL, INC. Booth W906

Prentice-Hall, Inc. will display tutorial books and software published under a joint venture with IBM, as well as its Profit Center accounting software and Skriwriter II word processing software.

The tutorials deal with popular

software packages such as Ashton-Tate's dBase II and are priced from \$29.95 to \$39.95.

Three modules for the Profit Center will be introduced: Job Cost, priced at \$695; Job Estimator, priced at \$395; and Information Query, a general accounting report manager priced at \$250. The Profit Center runs on the IBM Personal Computer family and compatibles, on the Texas Instruments, Inc. TI Professional and Wang Laboratories, Inc. Personal Computer.

Skriwriter II costs \$99 and is designed for the IBM Personal Computer and IBM PCjr.

Prentice-Hall, Englewood Cliffs, N.J. 07632.

PRINTEK, INC. Booth 1181

Printek, Inc. will display its Model 935 printer, which the company said will operate with most microcomputers.

The printer features a nine-wire print head and offers a high-resolution 36-by-18-char. matrix. It uses a dual-pass, single-return, unidirectional printing method with the head shifting on second pass to produce better quality in executive-quality or letter mode, according to the vendor. It features dual speeds, with both traction and friction feed, and it can perform medium and high-density graphics and data processing with spreadsheets of up to 220 columns and using up to 16-in. paper.

The Model 935 printer is priced at \$1,695.

Printek, 1517 Townline Road, Benton Harbor, Mich. 49802.

QUADRAM CORP. Booth 1850

Quadram Corp. will show several expansion products for the IBM Personal Computer, Personal Computer XT and PCjr.

Maxpac is a memory expansion card for the short slot of the IBM Personal Computer XT. A 384K-byte card is \$595.

Quadsprint, an enhancement board to upgrade the IBM Personal Computer and Personal Computer XT, is priced at \$695.

The Quadmemj expansion card for the PCjr provides an additional 128K to 512K bytes of memory at \$275.

The Quadri Expansion Chassis provides 360K-byte floppy disk drives for the PCjr and is priced at \$695.

The Quadri Memory Board, for use with the Quadri Expansion Chassis, comes with 128K bytes of memory installed and is socketed for up to 384K bytes. It is priced at \$275.

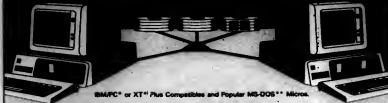
The Two Meg Card memory expansion card for the Personal Computer or Personal Computer XT provides 2M bytes of memory and is priced at \$1,495, fully loaded.

Palette Master is a high-resolution color graphics adapter for photo-like images. It is priced at \$695.

The Quadtape line of four internal or external streaming tape products ranging from 30M- to 60M-byte capacities is priced from \$1,395 to \$1,895.

Quadram, 4355 International Blvd., Norcross, Ga. 30093.

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Tempus-Link and Tempus-Data are highly advanced, yet easy to use tools for corporate micro and mainframe computer users. Their synergy and flexibility meet the needs of both non-technical and expert users.

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Tempus-Link and Tempus-Data's Open Architecture allows DB experts to build complex micro applications where mainframe access is totally transparent to the micro user, and this from virtually any user-designed and programmed micro application.

Tempus-Link's unique virtual disk system gives Tempus-Data users direct on-line and batch access to files stored on their mainframes but written in micro

formats such as CSV and DE**. Information Management and Data Control suddenly becomes simplified to DB professionals because micro files are now read and written in micro format through existing mainframe resources and even without prices.

Micro Tempus recognizes that high-quality corporate information is a time-sensitive commodity. Its integrated approach assures that the data provided to the micro user can be kept in synch with the mainframe's version.

Tempus-Link and Tempus-Data from Micro Tempus - a modest investment in personal productivity - a cornerstone in developing the office of the future today.

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• BP is a trademark of SOFTWARE ARTS.

NEWS

Comdex/Fall '84

SANTO BUSINESS SYSTEMS CORP.
Booth 800, West Hall

Santo Business Systems Corp. has announced the MBC 775 Portable Computer, which is compatible with the IBM Personal Computer.

The MBC 775 features an Intel Corp. 8088 microprocessor, Microsoft Corp.'s MS-DOS operating system, 256K bytes of main memory, two 360K-byte, 5¼-in. floppy disks, a 9-in. monitor and Centronics Data Computer Corp.-type port. The price for the MBC 775 is \$2,590, the vendor said.

Santo, P.O. Box 387, 51 Joseph St., Monmouth, N.J. 07074.

SEAGATE TECHNOLOGY, INC.
Booth 4305

Seagate Technology, Inc. will reportedly introduce a number of Winchester disk drives.

They will include a 10M-byte formatted, 3½-in. Winchester disk drive priced at under \$450 in OEM quantities of 1,000 or more; and a 20M-byte formatted, half-height, 5¼-in. disk drive, priced at \$636 in quantities of 1,000 or more.

Also featured will be the ST 4000 series of Winchester disk drives, ranging in capacity from 20M to 40M bytes and ranging in price from \$730 to \$975 in OEM quantities of 1,000 or more.

Seagate Technology, 880 Disk Drive, Scotts Valley, Calif. 95066.

SOFTLAN CORP.
Booth 882

Softlan Corp. will feature a multiuser accounting system designed for IBM's Personal Computer AT.

The software, which consists of six modules — accounts receivable, accounts payable, inventory, payroll, sales order and general ledger — will run under Microsoft Corp.'s Xenix 3.0.

Price of the multiuser system is \$796 per module.

Softlan, 153 Pierrepont St., Brooklyn Heights, N.Y. 11201.

STM ELECTRONICS CORP.
Booth A308

STM Electronics Corp. will unveil its upgraded portable personal computer that provides two-way communications between field personnel and their corporate data bases.

STM added an internal

1,200 bit/sec modem to its STM Personal Computer, which has a 25-line by 80-line LCD and is memory upgradable to 612K bytes. The machine weighs 17 lbs.

The price of the upgraded machine is \$3,799, STM Electronics said.

STM Electronics, 535 Middlefield Road, Menlo Park, Calif. 94025.

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'Polly wants a password.'

NEWS

Comdex/Fall '84

SUPPORT SYSTEMS
INTERNATIONAL
Booth 1284

Support Systems International will exhibit the full line of computer cables, desktop data switches and related computer products it manufactures.

Support Systems' product line incorporates a full range of interconnect hardware for microcomputers, minicomputers and mainframes, according to the firm.

The company will display its line of Federal Communications Commission-standard double-shielded cables, standard shielded cables and products for computer installations that include rack-mountable junction and patch panels, rack cabinets, breakout boxes, pocket cables, bulk plexus and cable and connectors, a spokesman said.

Support Systems will also introduce Micro-Match, a product designed and updated by Command Computer Corp. of Philadelphia.

Micro-Match is said to provide instruction on interfacing microcomputers to printers, CRTs, modems and plotters, micros to minis, and micros to mainframes.

Micro-Match provides pin-to-pin cable designs, switch-setting diagrams and jumper configurations.

The price for the Micro-Match service is \$600 per year, the vendor said.

Support Systems International, 150 S. Second St., Richmond, Calif. 94804.

TALUS CORP.
Booth C84

Talus Corp. will introduce the Talus Image Management System, which incorporates the T20/20 Personal Computer Image Scanner; the T20/22 Image Converter Board; and Taluscan Image Management software.

NTIS software
directory out

SPRINGFIELD, Va. — Five hundred programs developed by more than 100 federal government agencies are listed in the 1984 edition of the *Directory of Computer Software* published by the National Technical Information Service (NTIS).

The directory offers brief summaries that describe each program, the programming language the software was written in and its hardware requirements. Each entry is indexed by number, subject, source agency, hardware and language.

Federal agencies, including the Department of Defense, the National Bureau of Standards and the Department of Energy, make their programs and documentation available to users through NTIS. Available packages include applications and graphics software, a variety of software tools and modeling and simulation programs.

The 1984 *Directory of Computer Software* is priced at \$40 from NTIS, 6296 Port Royal Road, Springfield, Va. 22161.

The products are intended for use with the IBM Personal Computer, Personal Computer XT and compatible machines, the company said.

The price of the T20/20, which offers 200- by 200-pixel resolution, is \$4,985, according to the vendor.

The T20/22 Image Converter Board is a standard-size, Personal Computer XT printed-circuit board that features direct memory access for disk storage of images. Approximately 200 standard-size pages can be stored on a 10M-byte Winchester disk, the company said.

The price of the T20/22 is \$1,295, according to Talus.

Talus, 885 University Ave., Los Gatos, Calif. 95030.

TEW, INC.
Booth 872

TEW, Inc.'s customer service division will feature various service offerings to resellers and users of microcomputer products.

The company's latest service, named Product, is a mail-in program designed for the repair of Winchester drives and diskette drives, the vendor said.

The company will also demonstrate the features of its service programs designed for distributors and value-added resellers, according to a spokesman.

TEW, 15 Low Drive, Fairfield, N.J. 07006.

UNIFY CORP.
Booth 1232

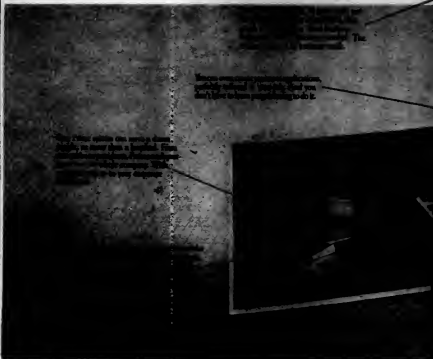
Unify Corp. will demonstrate the recently approved Independent Software Information Standard (Isis). Isis is a standard software interface for third-party applications using the AT&T Unix operating system.

Developed in part by Unify President Nicholas Nierenberg, Isis has been implemented on AT&T Information Systems 3B2 microcomputers running on the Unix operating system. It reportedly gives users access to integration of applications software packages.

Unify, 4000 S.W. Kruse Way, Lake Oswego, Ore. 97034.

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Voice system tunes up automaker's communications

DEARBORN, Mich. — Simple telephone communications did not do the job for Ford Motor Co. when it needed to stay in touch with a mobile sales force.

Field managers often were on the road and wasted time playing "telephone tag," when the people they needed at a district office were away from their desks and the traveling sales managers themselves were hard to reach. Even returned calls sometimes missed connections when the original caller became unavailable.

The automaker decided to try a voice messaging system and, after studying the proposals of three vendors, launched pilot programs at two sales offices in February 1983.

The successful pilot programs led to a permanent and growing system in which the company has 2,000 voice mailboxes and hopes to establish 30,000 mailboxes worldwide in the coming years.

Ford officials said the system produced by VMX, Inc. of Richardson, Texas, is saving the company communications costs and lost man-hours while improving productivity.

"We've reduced the amount of telephone calls and telephone tag in the field by installing the voice mail system. I think that in the long term, this will be the best way to improve our productivity," said Jim Soma, director of telecommunications services for Ford.

Soma said that while the voice messaging system is now used only in Ford's facilities here, it will be expanded nationwide and then worldwide.

He said it can help to overcome worldwide time differences — differences that leave Ford only a four- to five-hour business day "window" to communicate with its personnel in England and "virtually no window" in Australia and Japan.

He said that the system will first be extended to the Los Angeles area in 1985.

The VMX system, Voice Message Exchange, uses a store-and-forward technology. Using an 800 number, an employee calls his office and, if the

person he is calling is out, the employee leaves a message in an electronic mailbox. The caller also can check his own mailbox for messages and forward replies to others by pressing digits on the telephone set.

A Ford official said that advantages in the voice message system include eliminating interruptions of calls by incoming calls and the ability of the system to handle complicated messages with voice inflections and accents.

He said that equipment for the system was leased during the pilot phase, when 450 people had access to voice messaging, but that Ford began purchasing the equipment in January 1984. Four months later, the number of mailboxes had soared to 1,500.

One potential use for voice messaging, according to Ford, is in order processing, where dealers could call to order specific changes in cars scheduled for production. With the appropriate telephone lines frequently busy, the dealers could order changes at the touch of a telephone key.

DP conference to chart legal issues of micros

CHICAGO — Legal issues involving computers and the impact of the portable computer on corporate strategy are among the topics to be discussed at seminars scheduled for Info/Central: The Information Management Exposition and Conference, to be held Feb. 20-22 at the O'Hare Exposition Center here.

Info/Central will feature three days of conference sessions, with about 10 sessions each day. The show will concentrate on business applications of computers and communications systems.

The show's theme will be "Information Systems and the Executive Decision Maker."

Info/Software: The Information Management Exposition and Conference for Software will be held concurrently with Info/Central at the same location.

Cost of the exhibits for both Info/Central and Info/Software will be \$6 for preregistrants and \$20 on the day of the show. Info/Central and Info/Software sessions will cost \$85 for a half day, \$150 for one day and \$250 for three days.

More information is available from Info/Central, 900 Summer St., Stamford, Conn. 06905.



NEWS

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DIA

OA outlays see significant rise

NEWPORT BEACH, Calif.

Expenditures for office automation are expected to increase significantly over the next two years, surveys from a national accounting firm indicate.

The two separate surveys, while not identical, were both conducted by the Newport Beach, Calif., and Chicago offices of Price Water-

house & Co.

In California, respondents represented 48 companies in a variety of industries, including financial services, manufacturing, food service and state and local government. Surveys were distributed to 200 Orange, Riverside and San Bernardino County companies with revenues of more than \$10 million.

According to the survey, "within two years, approximately 75% of all the companies [surveyed] intend to have implemented all the [OA] applications included in the survey." These applications include word processing, spreadsheet analysis, text editing, graphics, microcomputer data base management, scientific engineering analysis, document transmission, project management, electronic filing, electronic mail and executive calendar and scheduling.

Workstations doubted

The survey also said the companies are planning to double their number of workstations in the next two years. It noted a 210% planned increase in the use of micros at these companies. Word processing functions are expected to grow 144%, the survey said.

More than 50% of the companies studied in California had revenues of more than \$50 million; of those, 23.7% had assets greater than \$500 million.

The Price Waterhouse survey of OA in the Chicago area found that 75% of those surveyed plan to expand their current OA department or open new branch offices within the next two years.

Twenty-six firms from a variety of industries, except law firms and government agencies, responded to the Chicago survey. Half of the companies with 1983 revenues of more than \$50 million said they spend between \$100,000 and \$500,000 annually on their purchased and leased office systems equipment and software.

In the California study, the average investment in workstations per worker ranges from approximately \$500 in large companies to \$1,000 in small firms. The survey noted that the reason technology investments are higher for smaller companies could be because some smaller firms are buying more, less expensive micros.

The survey also found that there is approximately one workstation for every five white collar workers. In two years, the survey said, one workstation will accommodate two to three white collar workers. Investment in workstations will range from \$5,900 per worker at large companies to \$1,000 per worker at small companies.

Also in California, the survey found that word processing, text editing and spreadsheet analysis are the most extensively used applications in the office. Although about 96% of the respondents said they used automation for word processing, only 50% said it was "widely used" for these purposes.

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SOFTWARE

NEWS

OA effort spans work force at national insurance firm

By Richard Winters
CW Staff

WORCESTER, Mass. — An office automation plan that puts workstations on the desks of secretaries and middle managers is not new. But one that brings computing power to 900 out of a firm's 1,300 employees — from chief executives to mail room clerks — is a bit out of the ordinary.

Such an OA implementation is currently under way at the Paul Revere Life Insurance Co.'s national headquarters here. The insurance and annuity firm, a subsidiary of Avco Corp. with 150 branch offices nationwide, is undertaking a \$3.5 million project to put either personal computers or terminals, all linked to the firm's mainframe-based OA software, on the desks of employees who can benefit from them.

The OA plan, set for completion by the end of 1985, relies entirely on IBM equipment. In all, 110 IBM 3178 terminals, 130 IBM 3280 terminals and 50 terminals for development work will join the 450 to 500 IBM 3178 and 3278 terminals already in use by the firm. Also involved are about 50 IBM 3270 Personal Computers, the computer of choice for, among others, the firm's vice-presidents who usually can avoid dealing with computers.

Top management was one of the first groups within the firm to be brought under the OA implementation, according to Executive Vice-President for Operations Charles E. Soule, who now has a 3270-PC on a table near his desk in his executive office. Soule said he uses the computer to access mainframe OA software — IBM's Professional Office System (Profs) running on an IBM 3033 under VM — for calendar and electronic mail features, and he uses those functions "to plan a meeting without having to get on the phone."

Soule wasn't ready

Among the top managers, the OA implementation — similar equipment is now on the desks of the heads of marketing, finance, human resources and legal departments — is still only in the trial stage, and Soule observed that, while most managers find OA useful, "I think we'll find some instances where they're simply not ready for it."

One executive who isn't ready to have a computer or terminal on his desk is the firm's president, Soule said. But, "when the monthly financial report is available one day earlier on the terminal, he may want one," Soule added.

At the other end of the work force hierarchy, employees not often considered knowledge workers, such as those working in the firm's mail room, will also be studied as the implementation progresses to see if they can benefit from access to Profs or the corporate data base.

Computer terminals in the mail room actually make a good deal of sense, according to Lois P. Heinemann, director of data processing administration and one of those spearheading the implementation effort. "That person [in the mailroom] is working with a lot of packages; that person needs to know what was

ordered and the day it shipped," she said, adding that such questions can be quickly answered by accessing the corporate data base.

Not every mail room employee will get a computer or a terminal, Heinemann said, but at least the supervisor and one or two key coworkers will have them — a situation, she said, that will be replicated in the firm's shipping and receiving department.

Conventional wisdom had held that a firm's uppermost and lowermost employee levels offer the greatest

See OA page 39



Dorrings works with Profs.

PICK ONE.



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NEWS

Users applaud PE superminis; software still an obstacle

By Charles Babcock
CIV New York Bureau

CHEERY HILL, N.J. — When Haselhurst & Associates, Inc., an Atlanta employee benefits consulting firm, bought a computer system seven years ago, it didn't plan on selling software.

The firm bought Perkin-Elmer Corp. superminicomputers — two 3280s and a 3210 — for its Seattle branch. The move freed Haselhurst from dependence on time-sharing and on an old Honeywell, Inc. mainframe that, according to the company, filled a room.

"At that time they [PE] were one of the few 32-bit producers [selling] at a reasonable price. PE did the best

"When we get into selling software, it's a liability to be on PE. We are still evaluating whether we want to be in that market. If we do, we would have to buy an IBM 4300 and make massive conversions of our programs."

— Cynthia Jones, Haselhurst & Associates, Inc.

of the 15 vendors we tested," said Cynthia Jones, consulting secretary and one of 300 PE customers at the Interchange '84 users group meeting held here recently.

Digital Equipment Corp. and Prime Computer, Inc. 32-bit machines

were double the price of PE machines at the time, Jones said. PE also had a good optimizing compiler for quick processing of Fortran code, she added.

Jones and Lori B. Comer, Haselhurst's Seattle systems analyst, said

PE's relational data base management system, Reliance, was built, updated regularly and functioned well for tracking and calculating employee benefits. PE's latest version of its 06/33 operating system, Revision 7.2, is "probably the best release they've put out," Jones said.

So what's wrong with being a PE customer?

One of the new facts of Haselhurst's business is selling employee benefit programs to clients who want to run them on their own equipment. Most of the clients are businesses, and most of their equipment is IBM.

"When we get into selling software, it's a liability to be on PE," Jones said. "We are still evaluating whether we want to be in that market. If we do, we would have to buy an IBM 4300 and make massive conversions of our programs."

Robert L. Dalton, corporate manager of DP for the Frank Edwards Co., Burlingame, Calif., said he is happy with a new PE system that connects 45 terminals and 16 printers in an auto parts distribution network.

Dalton reviewed five supermini-computer systems before deciding on PE 16 months ago. "[PE] guaranteed a good response time and the system has lived up to it," he said.

Robert Wallace, a director of Cranfield Data Systems of Bedford, England, and Phoenix and president of the Interchange users group, said PE is noted among its customers for producing "exceptionally good, reliable hardware."

Wallace said the company's software has been the target of criticism, but "is getting better."

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When you pick the COMPAQ DESKPRO, you do have it all.

COMPAQ
DESKPRO

It simply works better.

OA from page 28

not resistance to adopting OA for themselves, but Heinilsson said the implementation effort has not met with resistance from prospective users. "It's been more of a problem holding them back," she claimed.

One current user of the Profs system, Director of Value Analysis William J. Dominga Jr., said he has become very dependent on the system. When a change of offices temporarily took him away from it, he said he "went nuts."

Heinilsson said the implementation will succeed, if the managers of each department it will affect are convinced that improving productivity by as much as 50% to 60% — with no corresponding drop in labor costs — will still have an impact on their departments' bottom line.

Otherwise, Heinilsson said, the OA implementation is going smoothly, which she attributes to the fact that "we've done our homework." That homework consisted of a two-year, preimplementation study, the pilot project of which gave 76 people access to Profs. Those workers made a 18% productivity improvement, she said.

If the firm only achieves a 5% productivity boost from its new OA system, the system will pay for itself in three years, she said. If the firm gets only a 2.5% productivity gain, she continued, it will still receive a return on its investment equivalent to having put the \$3.5 million in a bank account — at 28.7% annual interest.

NEWS

Ireland seeking high-tech relief for unemployment

By Paul Gilroy
CW Staff

DUBLIN — After nearly 150 years of steady population decline, the Irish Republic is facing an unaccustomed situation — a population explosion. The increase has been so pronounced that today 50% of Ireland's population is under the age of 25.

For the Emerald Isle, this new development is a mixed blessing. While Ireland now stands poised for its first period of steady economic growth since it became a republic in 1922, the specter of unemployment looms larger than ever. For example, the International Organization for Economic Cooperation and Development (OECD) estimated recently that

Ireland's unemployment rate will increase to 18% in 1985 from its current level of 14%.

In contrast, neighboring Britain's jobless rate will fall slightly to about 11.3%, the OECD stated.

Like many countries, Ireland has watched its manufacturing industry sputter over the last 10 years. Now, in an effort to bring more foreign money into the country, the government has undertaken a dramatic and wide-ranging project to attract high-technology investment. By most accounts, the effort has succeeded admirably.

The basis of the new incentive is a maximum 10% corporate tax rate for manufacturing profits in Ireland.

through the year 2000. The duty applies to all goods manufactured in the country, no matter where they are sold. The tax benefits also apply to software and DP services.

In addition, the government offers a 100% depreciation allowance with accelerated depreciation provisions that can effectively reduce the net tax rate for many companies to zero during their first few years of operation. The government has also created the Irish Development Authority (IDA) and endowed it with a large budget to aid foreign firms in setting up shop in Ireland. The IDA not only cuts through bureaucratic red tape, but also helps companies find prime manufacturing locations and admin-

lators a nationwide network of technical training centers.

In terms of attracting businesses, the Irish government's strategy has seen impressive results. More than 100 high-tech companies have established manufacturing and development facilities on the island. The government estimates the output of the Irish electronics industry will exceed \$2.5 billion in 1986. More than half the foreign investment in Ireland is from the U.S.

The favorable tax rate has been the prime impetus. As a member of the European Economic Community, Ireland offers tariff-free access to nearly 300 million consumers. That, combined with the low taxes, has prompted several high-technology companies to base their European manufacturing and distribution centers on the island.

However, the investment has not translated into relief for Ireland's burdensome unemployment. High technology has added only about 20,000 new jobs, most of them among skilled workers. The IDA acknowledges that high tech will never provide significant opportunities for Ireland's unskilled and semiskilled work force.

Rather, the country hopes that electronics will create a stronger service sector to handle the infusion of foreign money onto the island. And in the near term, the government is concerned with retaining its stock of skilled workers before they seek employment elsewhere.

Education is Ireland's trump card. The youth of the country's population offers a motivated and energetic work force that is also increasingly well versed in the sciences. Major institutions like University College, Dublin, University College, Cork, Galway University and Trinity College have been beefing up their technical education offerings with government help. According to government figures, 61% of the institutions now offering degree and diploma or certificate programs were established in the last 10 years. Equally important, the government has taken steps to open up the traditionally rigid university system to a larger number of students.

The National Industrial Training Authority also administers a network of 17 training centers around the country. These heavily subsidized institutions offer introductory and continuing education to workers in technical fields and are another source of trained local talent.

Despite its success in attracting high-tech companies, Ireland is still worried about the flight of skilled young professionals from the country. Salary levels for computer professionals, for example, are about half to two-thirds as high as those of their American counterparts and lower than salaries in continental Europe. However, the government believes most of those professionals are

See RELEASE under 41

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NEWS

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RELIEF from page 40

willing to stay in the country if they can find meaningful employment.

The challenge for Ireland is to continue to draw high tech to its verdant shores at an even faster rate than it has in the past. The country seems to be well on its way to doing that. However, some observers believe the level of commitment from many companies is too tentative to promise any long-term relief. Because firms are required to invest so little to get their operations started in Ireland, they are less inclined to keep them running if times turn bad, they argue.

The Irish government believes exactly the opposite is true. Because it is so cheap to run a business here, it maintains, companies will be more inclined to fortify operations in Ireland and close down more expensive plants elsewhere. They point to the fact that Atari, Inc. continued to operate its Irish facility at full strength even as the company was laying off more than half of its Silicon Valley work force.

For now, the people of Ireland seem to be willing to give the government the leeway it wants to attract players in this fledgling industry.

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NEWS

Software helps airline reach new highs in efficiency

Application tools allow tie-in to worldwide passenger, cargo reservation system

HONG KONG — One of Southeast Asia's largest airlines has officially inaugurated two software application systems to increase efficiency in its operations and improve customer service.

Founded in 1946, Cathay Pacific Airways, Ltd. serves Hong Kong, Japan and China, Australia, India, Europe and Canada. Cathay's data processing operations rely on Sperry Corp.'s 1100/RS and 1100/68 multiprocessor systems running Sperry's Univac Standard Airline System.

The two recent software acquisitions — one to expedite passenger reservations, the other to expedite cargo shipments — are Sperry's Advanced Seat Reservation (ASR) facility and Cubic — Sperry's computerized cargo

system has facilities for such aspects of cargo operations as freight reservation, space control, shipment data capture, air waybill printing, goods acceptance, warehouse operation, manifesting, check-in at the import station and delivery to the consignee.

Robert Atkinson, Cathay Pacific's cargo manager, said the major benefits of the Cubic system will be in the area of customer services such as on-line reservations for packages, customs clearance and consignee notification.

Cubic will be implemented in two stages, Atkinson ex-

plained. The first phase will consist primarily of reservations and space control functions. Any of Cathay Pacific's offices equipped with the system will be able to access the available cargo space on-line and obtain instant confirmation of bookings. Functions to be implemented in

the second phase, in January, will cover everything related to cargo handling and routing.

Cathay Pacific is presently using the Cubic cargo network in Tokyo and Osaka, Japan; Taipei and Kaohsiung, Taiwan; as well as London and Frankfurt.

How to be in 16 places

The two packages are used in tandem with Sperry's Cupid worldwide reservation system. According to Donald Birch, manager of data processing operations, the ASR passenger system handles bookings and flight confirmations, primarily for first-class and business-class passengers and passengers with special needs, such as those with babies requiring infant cradles. The ASR network has been added to the airline's worldwide reservation system, which links 460 VDTs in 27 cities.

Computerized seat plan

Passengers benefit from the upgraded ASR facility because it will allow them to pick the seats they want up to six months in advance from a computerized aircraft seat plan displayed on the travel agent's terminal, according to a Cathay spokesman.

Seats can be confirmed instantly, and any possibility of overbooking is eliminated because the seat map is automatically updated, Birch claimed. The seat map provides information including seat location, smoking areas, viewing angles and special requirements such as those for handicapped people, he added.

The Cubic computerized



NEWS

Netherlands slow to catch high-technology fever

Low-key Dutch climate, export of R&D efforts hindering acceptance of new technologies

By Hans Burggraaf
Special to CWT

ROTTERDAM, Netherlands—Europe is condemning itself to a role as the world's recreation spot instead of a high-technology market contender, according to experts here.

"The dynamics of the

Netherlands' infrastructure for small- and medium-size enterprises are not [synchronized] with the dynamics of the electronics industry—[which] is in a period of strong growth," argued Ray Jursovich of the Department of Interdisciplinary Studies here at Erasmus University.

In a study titled "An Overview of the Major Issues Facing Small- and Medium-Size Enterprises in the Dutch Electronics Industry," Jursovich concluded: "The problem lies in institutionalizing a way of thinking and doing in working with information and building information net-

works which promote the creation of new market niches."

Jursovich maintained that while there is no shortage of aggressive Dutch entrepreneurs to develop high-quality products, most of the fruits of their research and development efforts are exported.

At the same time, certain aspects of the Dutch cultural climate—the lack of competitiveness in government, a history of low-risk behavior in financial institutions and an expensive welfare system that discourages self-initiative—make it difficult to set new ideas in motion.

Shoosens and disoosens

Jursovich's conclusion was echoed recently in a speech given by Philips Information Systems, Inc.'s Vice-President Gerrit Jeebo, who cited the Japanese scenario of a worldwide electronics market. "The Japanese scenario for long-term development around the world described the U.S. as a granary. The Far East, including Japan, will be the world vendor for all kinds of hardware. And Europe? ... [Europe will be] a combination of a cultural historic museum and a discotheque."

But the picture is not totally bleak, Jursovich pointed out. In Holland, there are sociological indicators that the situation is changing:

- Unions have expressed a willingness to cooperate with the implementation of new technologies.

- A growing national interest in electrical engineering and computer science exists.

- Financial facilities have been improved for small and innovative firms.

- Big companies, including [Philips Information Systems], have made efforts to promote spin-offs and actively seek cooperation with small- and medium-size firms.

In spite of all this, the high-tech fever has simply not reached the heights that Jursovich feels necessary for a healthy high-technology future in Europe. He lamented, "The dynamics that you feel when you get off an airplane at Kennedy or San Francisco International Airport are just not here."

Burggraaf is a senior editor at Computerworld Bnaux, Computerworld's Dutch affiliate and is a frequent contributor to Computerworld.

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NEWS

Major U.S. firms announce participation in Esprit

By Henry Draggner
Special to CW

BRUSSELS — Three of America's technology giants — IBM, ITT and Digital Equipment Corp. — will formally participate in the European Strategic Program for Research and Development in Information Technology (Esprit).

Although originally confined to European companies, recent joint Esprit proposals have included one from DEC's German subsidiary to work with the French conglomerate, Renault Automation, along with Comau, a subsidiary of Fiat in Italy, to pursue collectively a project on computer-integrated manufacturing. The plan has already been approved by Esprit officials, but a few details, such as funding, still remain to be worked out, sources said.

ITT actually became the first U.S. company to join the Esprit program. During Esprit's pilot phase last year, ITT's German and Belgian subsidiaries, Standard Elektrik Lorentz and Bell Telephone Manufacturing Co. (BTMC), were active participants. BTMC combined its efforts with those of a French company and the University of Louvain near here and produced a compiler for an advanced signal processor.

It is not yet clear what role IBM ultimately will play. It is generally held that Big Blue will join the European companies as a subcontractor in B-type projects. B-type projects are those innovations that are idea-driven, as opposed to A-type projects, which reportedly will account for 75% of all Esprit funding and will be system-driven.

Europe-wide network

Research on Open Systems for Europe (Rose) is a telecommunications project within the Esprit program. The participants within the Rose project will develop a Europe-wide network to connect research institutes, government bodies and the policy-making bodies of the European Economic Community (EEC) member states. Rose communications software will reportedly be developed using the AT&T Unix operating system and the Organizational Standards Institute (OSI) model standard for open systems interconnection created by OSI and the Consultative Committee on International Telephone and Telegraph.

An Esprit Information Exchange System (IES) is the

goal of Rose. The initial facilities made available in July 1984 consisted of the Eurokom computer-based conference; a mail and message system, which was installed at the computer center of the University College of Dublin; and a Unix-based facility giving the European Unix Users Group access to electronic mail, file transfer and other

facilities.

In addition to the Esprit IES, a number of other research networks and information exchange systems are planned or are already in operation with the Esprit network. These currently include the DFN network in West Germany; Janet in the U.K.; Ostride in Italy; Center-net in Denmark; Eunet for

the European Unix Users Group; and finally Hespnet, a network for High Energy Physicists.

Another Esprit project is Research and Development of Advanced Communications for Europe, which reportedly is intended to harmonize the European telecommunications market. European ministers in charge

of industrial policy have been pushing for European communitywide standards for telecommunications systems and open procurement policies for some time.

Because telecommunications standards are badly needed, the ministers have agreed to harmonize all new communications services to be offered as of January.

General DataComm beats Hayes for accuracy.

NEWS



**INTERNATIONAL
REPORT**
CW International
News Network

AUSTRALIA

MELBOURNE — The Victoria Police Department has been given the OK for the first phase of its \$10 million computer system. The \$4.25 million initial stage calls for an IBM 4381 with 8M bytes of memory and Software AG of North America, Inc.'s

Adabas data base software. The system, which will replace the police force's Sperry Corp. V77 minicomputers, will support some 165 terminals.

JAPAN

TOKYO — Some 92% of 1,791 Data Show attendees claimed to use microcomputers. Such were the findings of a Computerworld Japan survey conducted during the recent trade show here. The respondents used products from the following vendors, in descending order of preference: 45%,

NBC Corp.; 18%, Fujitsu Ltd.; 9%, IBM (up one percentage point from last year); 4%, Sharp Corp.; 3%, Hitachi Ltd.; and 2%, Toshiba Corp.

The companies that each held roughly a 2% share of the Japanese micro market included Ford Computer Corp., Mitsubishi Electric Corp., Apple Computer, Inc., Oki Electric Industry Co., and all others claimed the remainder, the survey said.

Findings also revealed that approximately 50% of users surveyed were not satisfied with hardware, software or services. Specific com-

plaints included the lack of capabilities and quality of available commercial software.

TOKYO — According to a report from the Ministry of Home Affairs, the local government of Japan had an installed base of 2,578 computers as of April 1, 1984, a 14.5% jump from last year. The computerization of local government offices has been gaining in popularity here, and to cope with Japan's emerging "communications society," the country has been adopting on-line systems with Kanji-character systems.

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The Reliability

Then we went inside and did a component count. The final score: Hayes 252, us 155. This can be viewed two ways: Either Hayes has a 60% better chance of developing part failure, or our modem has a 60% better chance of delivering higher reliability.

Eliminating operator risk is as important to us as eliminating errors. With our modem there's virtually no risk of electrical damage because there are no internal switches to deal with. General DataComm modems automatically select all call parameters.

The Company

The General DataComm intelligent modem is the newest product of a company that has been designing data communication systems for 15 years. A company whose customer list is a "Who's Who" of international business. Most of the Bell operating companies, and other telephone companies in the U.S. and Canada. Major banks. Brokerage firms. And many of the Fortune "500."

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The best connections in the business.

Comdex not popular in Europe

By Luc Sala
Special to CWS

The recent Comdex Europe, held in Amsterdam from October 29 to November 1, showed healthy attendance figures with 7,300 visitors, but it still does not begin to approach the dimension of the 50,000 people who attend Comdex shows in the U.S.

Nor did this past show provide much news or many new attractions — unless you wanted to set up shop in Europe. Potential employers could have had their pick of lucrative spots at this year's show, where many trade boards from European countries were represented in hopes of attracting business investments to their regions.

AT&T's Unix was the focal point for most of the exhibitors on hand, with AT&T and Olivetti Corp. promoting it via their newly formed Unix Europe organization.

The other big draw at the show was the International Computers, Ltd. booth, which for the first time displayed the vendor's Clan multisuser Unix-based supermicrocomputer (2800 series). This Motorola, Inc. M68010-based system works with four to 16 workstations, each having access to all systems functions.

But the third annual Comdex Europe just did not rise to be the international OEM or dealer show that the Interface Group, Inc. wants it to be. Although more than 50% of the attendees were not Dutch, the total number of visitors was still a bit disappointing.

The Interface Group, however, does appear to have the stamina to go on and eventually turn Comdex Europe into a major event. All the right ingredients are there.

Sala is the editor of a Netherlands-based microcomputer newsletter and a frequent contributor to Computerworld.

NEWS

Tool condenses time for checking program changes

By Paul Gilman
CW Staff

PLEASANTVILLE, N.Y.—The syndrome is common: The program you recently brought in for maintenance is now showing an annoying bug, and you cannot seem to find where the error occurred. It could be the result of something as small as a dropped punctuation mark or an accidentally deleted line. The only solution is to examine the source code line by line.

Two DP shops that have experienced such problems in the past have taken steps to overcome them by installing a source code comparison utility for use in program maintenance. Although they report that the product is not for use by everyone, both said the \$1,000 purchase price was well worthwhile.

Reader's Digest Association, Inc. here installed Maintenance Aid (Maid) from Data Aid, Inc. of North Granby, Conn., late last year. The

product has helped to cut the time required to check programming changes by at least half, according to Elizabeth Adams, financial analyst.

Adams is part of a group of three analysts and 12 programmers who write and distribute program changes to Reader's Digest locations around the world. The department writes mostly in Cobol under IBM's MVS operating system.

Cut-and-paste process

Previously, the process of making maintenance changes had been a cut-and-paste operation in which changes were difficult to track, especially on the larger programs, Adams said. With Maid, the time required to track down errors has been substantially reduced, she said.

Maid basically compares two versions of a program and lists the changes that have been made. It produces reports showing the five lines of common code preced-

ing and succeeding the changes, with any additions or deletions listed in the middle. The reports can be used to ensure that the required modifications have been made as well as to track down inadvertent changes, Adams said. "In one case, a programmer had accidentally deleted a paragraph of code, and we were able to pull it back up without re-writing it," she said.

Documenting changes takes only about one-tenth as long as it did before Maid was installed, she said. The tool has cut supervision time by about one-third, she estimated.

Steve Merritt, a section manager for financial applications at Mead Corp. in Dayton, Ohio, was less enthusiastic about the product, but said that it was still worth the purchase price. Because Mead programmers are required to document changes heavily, Merritt said Mead uses the product only about

once a month.

Mead uses Applied Data Research, Inc.'s ADR/Librarian for its source code library. Maintenance is done in partitioned data sets (PDS) under IBM's TSO. Only current versions of programs are maintained in the library, with previous versions archived on tape.

"We don't use the compare feature on Librarian, and occasionally we want to compare different versions of a piece of software," he said. To do that, the user creates two PDSs and loads the current and archived versions of

the program. A Maid comparison can then be run to generate a list of lines that have been changed or deleted.

"It's mostly used when we don't have the source code or when the programmers can't remember what changes they've made," Merritt said.

If Mead begins using the archival functions of ADR/Librarian, it would negate the need for Maid, Merritt said. Until then, he thinks Maid is a handy utility to have available. "I wouldn't be surprised if it comes along one day and really proves itself," he said.



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NEWS

PBX market growth found a boon for large vendors

AT&T, Northern Telecom, Rolm expand market share; smaller firms pull out

NEW YORK — Growth in the private branch exchange (PBX) market helped large vendors such as AT&T, Northern Telecom, Inc. and Rolm Corp. in 1983, while at the same time causing other suppliers to lose market share or quit the business, according to a recent market research study.

The most significant development in the U.S. PBX market, the study by Northern Business Information, Inc. concluded, has been AT&T's ability to regain market share after more than a decade of losing ground.

The study estimated that AT&T, Northern Telecom and Rolm all made slight gains in their share of the market last year, with AT&T leading the pack with a 24% share. Northern Telecom was estimated to have a 16% share, followed by Rolm with 14%.

Shipments of PBXs increased 17% in 1983, compared with a 6% growth in 1982, the study found. That double-digit growth is not expected to continue, the study stated, noting that in 1983 many Centrex users bought PBXs because of worries about access charges and hefty rate increases.

Although 1983 growth rates are not expected to continue, "the PBX market will remain healthy," the study predicted.

AT&T's introduction of the System 86, the company's first digital switch, helped drive demand for all digital products in 1983, the report said.

The System 86, the report stated, "legitimized Rolm and Northern Telecom's approach to the market. AT&T's emphasis on digital PBX-based office automation systems is shortening the average life cycle of PBX systems; analog electronic

switches are starting to be replaced with digital ones."

Established PBX suppliers, the study stated, are "fighting hard" to maintain their positions and to take advantage of a lack of networking products offered by IBM. Meanwhile, other major computer manufacturers are working with PBX vendors to develop interface devices to connect their systems with PBXs.

The volatile PBX market has attracted some new vendors, while causing others to quit the market. Recent casualties in the PBX market have included Datapoint Corp., Rockwell International Corp. and Telescenics, Inc.

The report, priced at \$1,975, is available from Northern Business Information, Seventh Floor, 157 Chambers St., New York, N.Y. 10007.

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Seminar to stress microcomputer communications

WASHINGTON, D.C. — The first in a series of four seminars on personal computer communications, each led by J. Scott Haughdahl, will be offered here Dec. 3-4.

The seminars will focus on personal-computer-to-mainframe communications — particularly via gateways and communications servers — and on personal computer local networks, according to the sponsor, Architecture Technology Corp. Haughdahl is said to have considerable experience in simulation of multiprocessor mainframe environments and the design and implementation of specialized server software for personal computer local networks.

Other seminars will be held in Orlando, Fla., on Dec. 5-6; in Los Angeles on Dec. 10-11; and in Honolulu on Dec. 13-14.

Seminar registration is \$645. Additional details are available from Architecture Technology, P.O. Box 24344, Minneapolis, Minn. 55424.

Meet to target audit, DP staff

BOSTON — MIS Training Institute, Inc. will hold a conference titled "Control, Audit & Security of Digital Equipment Corp. Systems," Dec. 3-6 at the Westin Hotel here.

DSC President Kenneth Olsen will give the keynote speech, touching on the impact of current and future software and hardware systems on management information and the role of the auditor and DP professional.

The conference will include sessions on VAX-11/VMS control and security, RSX-11M/RSX-11M Plus control and auditing, networking and local-area nets, AT&T's Unix, VAX-11 audit packages, encryption and microcomputers.

The conference fee is \$660. More information can be obtained from Beth Evans, MIS Training Institute, 4 Brewster Road, Framingham, Mass. 01701.

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NEWS

Lawyers advocate LSInet to ease work in complex cases

By Donna Raimondi
CW Staff

BOSTON — A computerized legal network designed to make research materials and legal counsel in large, complex civil cases more accessible is under development here by a group of lawyers.

The system, called LSInet, will permit member law firms to store information on a central data base, electronically share files, refer work to each other and retrieve information using software designed by Programming Management, Inc. of Milton, Mass., said Charles J. Purelli, president and chief executive officer of Litigation Systems, Inc.

Scheduled to begin operations by the end of this year, LSInet will provide networking and storage of case files. Instead of just access to case law, Purelli said. Fifteen major defense law firms across the country are currently members of LSInet, and Litigation Systems is actively recruiting insurance

companies and self-insured corporations to join, he said. "With our network, an insurance company could keep track of all litigation being handled by its law firms across the country."

LSInet was the brainchild of William E. Bailey Esq., former senior vice-president and claims counsel at Commercial Union Insurance Co. and an authority on asbestos-disease litigation. Property-casualty insurers paid more than \$4 billion in fees to outside legal counsel in 1983, Bailey said. Over the last several years, these costs have been going up by about 20% to 30% per year, he said.

Much of the expense is not for attorneys' hourly fees, but rather for developing and maintaining huge paper files, Bailey said. Realizing that automation had not been used to its fullest potential to control these ancillary expenses, Bailey set out to develop a network of computer, legal and insurance expertise to address the problem, he said.

Members of LSInet use IBM Personal Computers or compatible models or IBM-type terminals to connect via telephone lines to a data base that resides on an IBM 3085 mainframe, backed up by an IBM 3081, Purelli said. A password system protects confidential files, while public information such as court records and government documents can be shared, he said. The menu-driven programs were designed by lawyers to prompt in the same sequence a lawyer or paralegal normally uses, he said. Purelli said a paralegal researcher might overlook discrepancies in the testimony of an expert witness who has testified several times in different states. The computer system will not overlook such discrepancies, and the variations can be brought up at the witness's next appearance.

More information is available from Litigation Systems, 77 N. Washington St., Boston, Mass. 02114.

**WHAT WE
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NEWS

Mini saves hospital time on tracking drug schedules

System helps pharmacy label intravenous solutions, monitor their dosage

PORT LAUDERDALE, Fla. — Holy Cross Hospital here needed a better way to track medication schedules and label more efficiently the 500 to 800 intravenous (IV) solutions administered daily to patients.

Approximately four years ago, the 600-bed hospital acquired a Four-Phase Systems, Inc. IV-70 minicomputer, and recently, the hospital upgraded to a Model IV-90. "We needed more memory," said Edward Probst, director of pharmacy at Holy Cross.

The pharmacy application, written in Cobol and part of the Four-Phase system's Multifunction Executive (MFE) software, schedules

patients' medications and IV labels. A line printer is used to produce unit dose medication envelopes, medication records, management reports, financial reports and clinical drug monitoring. A character printer is dedicated to printing the IV labels, which, Probst said, serve valuable time. "To type all those IV labels each day would be an enormous job," he said. The pharmacy secretary uses the Four-Phase system for printing management reports, newsletters, labels and memos.

Files are structured in a way to make it possible to print the hospital drug list by American Hospital Por-

ulary Service categories as well as alphabetically by generic name with cross-references to trade names.

Probst said the system is extremely reliable. "The system provides the pharmacy with the flexibility to schedule preventive maintenance, system and program upgrades and tests during slack hours. The system also supports unit dose and intravenous admixture distribution," he said.

Because the department work load slows down at night, the pharmacist on duty runs programs to print patient drug records, charges, discharge summaries, clinical drug mon-

itoring and cost and revenue reports.

As a security feature, the MFE software requires a valid sign-on code for access to the system. This allows the application program to identify the pharmacist who reviews, approves and enters the physician's medication orders into the patient's medication record. By use of a priority indicator in the sign-on code, the pharmacy management program gives only authorized personnel access to certain functions.

For the future, Probst said, the hospital plans to write software that will make the system even more reliable.

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COMPUTER ASSOCIATES

Small-computer meet scheduled

ARLINGTON, Va. — A three-day conference on small computers in government will be held at the Sheraton National Hotel here Dec. 10-12, 1984.

The Third National Conference on Small Computers in Government, sponsored by the Public Management Institute of George Mason University, is geared toward DP and office automation technical professionals, managers of small-computer users, small-computer professional end users and administrative management personnel.

Topics of the seminars and workshops revolve around management issues and concerns. A vendor showcase on small-computer products and services will be included on Dec. 10.

Registration fee for the conference only on Dec. 10-11 is \$455 for government registrants and \$510 for industry participants. Workshop-only fee on Dec. 12 is \$285 for government registrants and \$310 for those in industry. Conference and workshop fees for all three days are \$625 for government members and \$700 for industry members. More information is available from USFPA, 1630 Elton Road, Silver Spring, Md. 20903.

IBM directory lists software

BOCA RATON, Fla. — IBM has published a catalog of software programs for its Personal Computer that includes entertainment, education, personal productivity and business applications.

The Directory of Personality Developed Software includes programs developed by IBM employees and individuals outside IBM. The first issue contains 56 new programs for the Personal Computer, ranging in cost from \$14.95 to \$149.95.

The directory is scheduled to be published three times a year. The first issue is being distributed free. Subsequent issues will cost \$4 a copy; an annual subscription is \$10. The catalog can be obtained at authorized IBM Personal Computer dealers.

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NEW YORK - The 4th edition of the 1984 Directory of Computer Installations lists 16,000 computer users in NY, NJ & CT. Each site includes a profile of the hardware installed, software installed, (languages, databases, etc.), consultants used, future plans, applications and DP

executives' names, titles, and phone numbers. An Index provides quick access to 133 cross references by hardware, software and industry. Price: \$379. Call (212) 683-0606. Computer Management Research, Inc. 20 Waterside Plaza, NY, NY 10018. Act now and receive free vendors' directory.

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NEWS

Board protects accessible micro

Ensures use by accounting personnel only

SCOTTSDALE, Ariz. — When the accounting department for a digitizer manufacturing plant here first considered buying a personal computer, its manager thought the machine would reside in a secured area. But when the department bought its IBM Personal Com-

puter XT, the machine ended up in a well-traveled spot. About 50 people from shipping, engineering, personnel, manufacturing and other departments at California Computer Products, Inc.'s digitizer division track by the machine daily.

"It's kind of a pathway

they use through the building," according to Connie Grennan, accounting supervisor for the firm.

Grennan said she was concerned that an unauthorized passerby might access the Personal Computer's operating system and wipe out financial files.

The digitizer division of Calcomp, a Sanders & Associates, Inc. subsidiary, manufactures components that are shipped to distributors and other Sanders facilities. The Personal Computer XT maintains the division's in-house financial records, handles management report generation, word processing and data base management.

When a user turns on the Personal Computer, its operating system comes up. With some computer knowledge, a user can access the operating system and erase it, Grennan said.

The digitizer division's accounting department keeps backup copies of all its files and could restore any deleted information if necessary, Grennan said. But instead of relying on this time-consuming, after-the-fact solution, she sought an alternative that would prevent unauthorized access in the first place.

Internal security

Grennan purchased an internal security board, Stoplock III from SDI, Inc., that uses passwords to prevent unauthorized micro use.

With the product installed in the micro, a user must type in a password to access the operating system screen. Only the seven members of Grennan's accounting staff have passwords.

The security board, a printed-circuit card, also provides an audit trail that records attempted accesses to the system for later readout. "Now I can go back and trace who's used the computer," Grennan said. "I feel more comfortable and safe with the security board installed since only accounting staff can enter and retrieve data."

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NEWS

Application developer keeps insurance firm up-to-date

Stiff competition prompting need for increased flexibility from information services

LINCOLN, Neb. — Deregulation in the financial and insurance industries has introduced stiff competitive pressures to expand services, develop marketable products and respond quickly to opportunities. In order to avoid falling victim to the current shakeout in the financial services industry, a large insurance company here decided to adjust its information processing strategies to the hotly competitive environment.

Bankers Life Nebraska, a \$940 million institution with headquarters here, is branching out in such areas as financial services, securities and other investment-oriented products. It is also in the process of revamping its information services capabilities as one key weapon in its search for optimum profitability.

"Making information more accessible and readily helpful to our users is a foundation of our continued success," said Michael Jaskolka, assistant vice-president of information services. Jaskolka manages a 14-person department responsible for supporting the growing information demands of headquarters and sales offices located in 42 states.

More accessibility needed

Given the intense competitive pressures of the industry, Jaskolka said he believes that the information services function must adopt a new flexibility, one which is more immediately accessible to users at all locations. To that end, Bankers Life has a network of close to 200 personal computers and a five-member technical group dedicated to developing micro-based, point-of-sale products for the sales force.

"We're committed to removing as many obstacles as possible to our users' ability to recognize and seize opportunities, because effective decisions are based on accurate, timely and meaningful information," he said.

In its effort to improve its information services, in mid-1983 Bankers Life began converting from a Sperry Corp. 1100 system to an IBM environment. In a parallel effort, it made a commitment to on-line processing. Last year, the firm installed an IBM 3085 and began the laborious process of transferring files. Simultaneously, it installed a fourth-generation application development tool to meet its on-line development requirements, Jaskolka said.

After considering other development tools by Informatica General

Corp. and Pansophic Systems, Inc., Bankers Life selected Oxford Software Corp.'s User File On-Line (UFO) program, which it now uses for all of its on-line processing requirements, according to Jaskolka.

"My primary selection criterion has always been vendor service," Jaskolka said. "In terms of vendor commitment to its product, as well as ongoing enhancements, UFO fit Bankers Life's requirements best. We determined that UFO is the most widely used applications development tool in the CIBS environment," he added. "That carried a lot of weight with us."

Until mid-1983, the Sperry 1100 handled virtually all of the firm's data processing requirements. Primarily a batch system, the insurance company's DP department was able to offer very limited on-line capabilities. Users and programmers alike were frustrated by slow turnaround in application development, Jaskolka said.

Almost immediately after the installation of the 3085 and UFO, Bankers Life noted a substantial increase in both the quantity and quality of information products, Jaskolka said. Applications that would have required two to three days to develop

using traditional IBM CICS programming techniques could now be dispatched in as many hours using UFO, he said.

"Working as teams, programmers and users can work with UFO as a prototyping tool, modifying fields and data in real time to produce immediately useful products," he said.

"As far as shortcomings and problems, we haven't experienced any yet," Jaskolka said.

Future plans call for Bankers Life Nebraska to complete the migration to the 3085, making all information available to users at headquarters and sales offices, Jaskolka said.

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NEWS

Close call with floodwaters convinces oil refining firm

OIL CITY, Pa. — Floodwaters that came too close for comfort to an oil refinery's computer center helped convince the firm of its need for a detailed disaster recovery plan.

On Feb. 1, 1982, water from Oil City's flood lapped at the door of Quaker State Oil Refining Corp.'s headquarters here.

In the data processing center — a few feet from the door — Al Tucker, manager of computer systems development, shut his equipment down and began moving tapes and forms to safety on the second floor. The water stopped rising a fraction of an inch short of the door.

If a similar disaster struck today, seven teams of DP employees would react according to a plan drawn up after the '82 flood that gives each team specific responsibilities for shutting down the system and moving the firm's processing to a commercial host site.

According to John Rudolph, Quaker State's corpo-

rate security analyst, "We chose the team approach because it's simply impossible for one individual to perform all the tasks required."

■ The salvage team, which assesses the damage, helps make recommendations regarding new equipment and salvages forms, tapes and anything else possible.

Rudolph said team members come from DP and are

assigned to teams according to their areas of expertise. The software team consists of systems programmers and data base administrators; the applications team includes programmers and the firm's systems analyst; Quaker State's operations manager is a member of the temporary processing center team.

"We kept the teams as

much as possible within the DP function both for control reasons and because [DP staff members] are experts," Rudolph said. "They know the terminology and the team breakdown is a data processing function."

A chart shows the teams steps that must be taken, in chronological order, to set up processing at the hot site.

Each team meets with Rudolph quarterly to define its functions, put them into procedures and come up with planning requirements. All the plans are part of a disaster recovery manual.

If disaster strikes, some teams will relocate to the firm's recovery facility, RMI Co.'s Hotaler, in nearby Niles, Ohio. Some teams will stay in

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*—John Rudolph,
Quaker State*

rate security analyst, "We chose the team approach because it's simply impossible for one individual to perform all the tasks required."

Quaker State's seven disaster recovery teams are:

■ The temporary processing center team, which performs operations functions.

■ The software team, which ensures that the firm has an operating system at the hot site.

■ The telecommunications team, which is responsible for establishing telecommunications and voice contact between headquarters and the hot site and among the various teams and all the firm's remote locations.

■ The new hardware team, which evaluates damage to the equipment at headquarters and determines whether reconstruction or replacement is necessary.

■ The application team, whose primary responsibilities are to get the systems up and running and work with users.

■ The management administration team, which controls and coordinates all

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NEWS

of urgent need for data center disaster recovery plan

Oli City, and some will be split between the two sites. In addition, Hotsite personnel will be on hand at the recovery facility to help correct hardware and software problems as they arise, Rudolph said.

According to the team recovery plan, disaster recovery will begin with the temporary processing center

team, which will initiate a planned shutdown procedure at the DP shop. The management team will meet and decide whether to relocate operations to the hot site. If the decision is made to use the hot site, the management team notifies team members.

The management team will also establish a command post from which it can

coordinate the recovery operation. It will notify the hot site to prepare for disaster processing and will arrange transportation for team members.

The temporary processing center team will obtain backup tapes and other material from Quaker State's off-site storage facilities. At the same time, the salvage team

will coordinate security with civil authorities and begin to assess the damage on-site so it can advise the new hardware team on how to proceed.

Then the management, software, communications and applications teams will leave for the hot site. The management team will keep a representative at corporate

headquarters and send one representative to the hot site. These representatives will coordinate site activities and handle contingencies and disputes as they arise.

At the site, the software team will restore the operating system. Concurrently, the applications team will work with the firm's users to establish a start-up strategy for disaster processing.

The software team will then run tests on the operating system. At the same time, the communications team will begin establishing links between remote sites and the backup operating system.

The temporary processing center team and the application team will then begin restoring the data base. They will run jobs to prepare the system to start operations.

The temporary processing center team will also schedule critical applications such as order processing, payroll and inventory according to the number of functional terminals the firm has available for use. Concurrently, the communications team will test data communications links and work out any bugs.

When all these arrangements are complete, the backup system will begin to process data. The temporary processing center team will take responsibility for normal operations. "We will be up, hopefully, and running just as we were at our own site," Rudolph said. The applications team will guide users through disaster processing procedures.

By the time operations are running at the hot site, the new hardware team at the headquarters will have begun contacting vendors for replacement equipment.

Continual checking

Throughout the recovery process, a checklist ensures that each part of the plan gets accomplished in its proper order, Rudolph said. "Each team contacts the management team periodically to inform them, 'I am ready to start point B.' If the other parts of the plan are in place, they will be told to continue; otherwise, they will wait."

Since the recovery plan was put in place, the Quaker State teams have performed one partial disaster recovery test. The firm plans to schedule a complete simulated disaster within the next three months.

One of the reasons Quaker State chose Hotsite as its recovery facility was the center's promise to grant unlimited disaster testing time during Quaker State's first year under contract, Rudolph said. Hotsite offered this benefit and reduced rates to all of its charter customers.

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NEWS

Letter shop uses minicomputer to get its messages out

NEW YORK — Travel advertisements showing white sands, blue water and a sailboat are meant to make a viewer seek more information by mailing in the coupon clipped from the bottom of the ad.

The advertisements make it easy for the viewer to respond. This is part of advertising programs that depend on responses to define when, how and where to advertise. The potential customer's only concern is to send in the coupon and get back the booklet as soon as possible.

However, when the customer mails the coupon, they set in motion a chain of events called fulfillment.

Although the reply is to what appears to be an airline office, the air-

line will probably never see the inquiry. Between the customer and the airline is a letter shop — an organization that specializes in fulfillment of such information requests.

One such letter shop is Associated Litho and Letter Service, Inc. (ALLS) here, which handles fulfillment for a major European airline and other clients. Joel M. Weiss, who operates the letter shop, took over the 66-year-old business from his father 30 years ago.

"The advertising campaign begins with the need to promote a function of an airline," Weiss said. "It can be summer vacation travel, winter ski travel or executive business travel. It also could support cargo sales for the

airline. When the advertisement is designed, a booklet or brochure to be used for inquiry response also is designed." The letter shop will keep a supply of the booklets in its inventory.

ALLS may keep 332,000 copies of 80 different pieces of literature awaiting inquiries from one client's advertising campaigns.

Inquiries are delivered directly to the letter shop, where a mailing label is prepared, the proper items are selected and packed in an envelope, the label, with information indicating which booklets are enclosed, and postage are affixed to the envelope and it is put in the mail.

"Timeliness is an important part

of our function," Weiss said. "We try to get a fulfillment within 24 hours of the time we receive a response. After all, if a person is interested in something, they want information as soon as possible. If it takes too long, they probably will lose that interest," he added.

"Although the functions we perform today are almost the same as they were 30 years ago, the way we perform them is constantly evolving with technology," Weiss said. "The latest is the addition of a minicomputer that we use to print labels and letters and to compile our reports."

Weiss noted that a computer works only as well as its programming and that only a few vendors had any software that could work in a letter shop environment.

"One package, including software and a Mentor minicomputer produced by Applied Digital Data Systems, Inc., fit our needs almost exactly," Weiss said. "The programming was written by Software Marketing Associates in Wethersfield, Conn. They know the letter shop industry well, and since our installation, they have sold four more systems in the New York area."

Before computerization two years ago, ALLS did everything manually. When inquiries were received, labels were prepared on a typewriter, and all reports were hand-calculated and typewritten. Repetitive letters were printed, with the name, address and salutation manually filled in by typewriter.

As long as volumes were low, this system was satisfactory. However, ALLS now processes over 100,000 inquiries a year just for one client. Its other clients add to that load.

"We still have to input the data through a keyboard much the same as we did with the typewriter," Weiss said. "But there the similarity stops. Once we have captured the data, there is almost no limit to the ways we can use it."

ALLS operates an Adds Mentor 4000 with 256K bytes of core memory and 300M bytes of disk storage. The system runs five CRT terminals and two printers, a 300 line/min line printer and a 65 char./sec letter-quality character printer.

One key report Weiss uses is the daily inventory report to keep count of all the pieces of literature. Before computerization, the letter shop often ran low on specific brochures because any shortage was apparent. Now, every piece of literature is deducted from inventory when the labels are processed. Literature is added to the inventory as it is received, and the daily report shows the balance on hand.

Another by-product of the data entry is the activity report, a tally of all inquiries, listing the source (ad coupon, response from mailings, telephone calls), literature sent and other information.

"With our old manual system, it used to take hours to calculate and type this report," Weiss recalled. "Now it only takes a few minutes to compile in the computer and another 30 seconds to print. This is a tremendous time savings."

As a profit center, the system has contributed to a 60% increase in revenue with a corresponding 25% hike in profitability, he said.



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[illegible][illegible]

The image shows a close-up of a document, possibly a financial statement or ledger, with a grid of numbers and text. The word "OFFICE" is visible in the bottom right corner of the document. The document appears to be a multi-page report, with the visible page containing a table of data. The table has several columns, some of which are labeled with numbers (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100). The numbers are arranged in a grid, with some cells containing text and others containing numbers. The document is slightly tilted, and the word "OFFICE" is printed in a bold, sans-serif font in the bottom right corner.

[illegible]

OFFICE SUPPLY COMPANY				
MONTHLY SALES SUMMARY (IN \$ THOUSANDS)				
SALES	GENERAL MERCH.	OFFICE SUPPLY	GRAPHIC EQUIPMENT	ALL PRODUCTS
JANUARY	\$68.5	\$82.0	\$22.2	\$1,592.7
FEBRUARY	72.8	487.7	58.9	4,585.7
MARCH	52.7	591.1	68.5	4,558.2
APRIL	68.5	59.0	58.0	572.2
TOTAL, SALES	\$,582.0	\$,558.8	\$,427.2	\$,975.7
EXPENSES				
GENERAL MERCH.	\$,178.0	\$85.0		\$,458.2
OFFICE SUPPLY	445.0	445.0	\$22.2	572.2
GRAPHIC EQUIP.	445.0	58.5	52.7	572.2
TOTAL, EXPENSES	\$,1,068.0	\$,1,088.5	\$,1,000.0	\$,1,502.6
NET, SALES	\$,514.0	\$,470.3	\$,427.2	\$,473.1

NEWS

Dasd program eases daily backup for power company

HOUSTON — A power company here found it was gathering a multitude of problems backing up data for a nuclear power plant construction project.

Daily backup of a Houston Lighting and Power Co. (HLAP) data center here was smoothed through use of Dased management software, according to HLAP senior programmer Robert Lauderdale.

The Dased software allows the data center to back up its day's processing onto five tapes — instead of the 26 tapes needed by the previous Dased software. It has also reduced backup time from "an eight-hour-a-day, five-day-a-week job" to one to two hours nightly, Lauderdale said. The data center using the Dased software is the main computer center for the South Texas Project (STP), a nuclear power

plant being built by HLAP 100 miles away.

The Dased software, DMS/OS from Sterling Software Marketing, is also being used to keep track of Dased usage in the data center, where data storage demands have required the facility's 20 IBM 3350 spindles to be replaced by 36 spindles of 3350-compatible Amdahl Corp. 6250s in this year alone. The center also has 16 spindles of IBM 3380 storage.

Lauderdale said it took only about 10 days out of the software's 30-day trial period before the data center was sold on it. "What really sold us on DMS/OS was that after we installed it, I had to leave for a day. I told one of our senior programmers

that I had just installed a new system and that it ran under SPF. I told him to go through it to see what he could do with it and that when I came back, I'd give him another report on it," Lauderdale said.

"When I came back the next day, he had successfully completed nearly every function that DMS/OS had to offer, in the simulate mode, without ever touching the manual."

Among DMS/OS's features, Lauderdale praised its volume configurator, which provides the ability to move data between Dased devices. He said the volume configurator was useful when HLAP-STP made its switch from 20 to 36 spindles. Lauderdale added that he was pleased

with the product's ability to migrate individual data sets to selected disk packs. "We did a complete migration of all 20 spindles in about four hours," he said.

Lauderdale praised the product's Structured Programming Facility interface. "[It] generates the JCL for you, so you don't even have to save it every time — you can save it one time, and it's always there."

The software, he added, also aids disaster recovery. In December 1983, an operational error cost a week's worth of data in the backup. "DMS/OS came to the rescue and brought us right back up to tape," he noted. "Our recovery time was less than 24 hours from our disaster."

Meet to cover high-tech mart in China

NEW YORK — The outlook for market opportunities in the computer and high-technology industries in China will be among the topics discussed at the second national conference on doing business with China, Dec. 3-4 at Scouter's Concourse Hotel in Arlington, Va.

Sponsored by the Energy Bureau, Inc., the program was created for executives and officials from industry and government who are responsible for trade agreements with China.

Presentations will describe the negotiations as well as the current economic, political, legal and regulatory climate in U.S.-China trade relations.

Speakers at the conference include representatives from China Energy Ventures, the Chinese Embassy, the U.S. China Industrial Exchange, Touche Ross and the U.S. Department of Commerce.

Further information is available from the Energy Bureau, 41 E. 42nd St., New York, N.Y. 10017.

IBM micro role topic of seminar

SAN FRANCISCO — A one-day seminar focusing on the technology and market impact of several IBM microcomputer products will be held Nov. 29 at the Hyatt Regency Embarcadero here.

Sponsored by Future Computing, Inc., IBM products to be discussed at the meeting are the IBM Personal Computer, the Personal Computer AT, the Topview operating environment and the PC Network.

Future Computing President Fortia Isaacson and other company executives and analysts will speak at the meeting. Registration is \$600 — \$480 for Future Computing clients.

More information is available from Future Computing, 8111 LBJ Freeway, Dallas, Texas 75261.

A LONG, DRAWN EXPLANATION OF THE DCA



NEWS

Citibank stalks software for data, user protection

NEW YORK — Concerns about data privacy kept some users from taking full advantage of office automation tools at Citibank here and posed a threat to one of the firm's technological goals.

"The thrust of our office automation effort is to enhance our management's capabilities, to integrate technology in a way that they can use it," according to Richard W. Coughenour, Citibank vice-president and director of office automation.

In line with this goal, Citibank connected more than 500 micros, mostly IBM Personal Computers, to its in-house EMail telecommunication system, which operates under the firm's mainframe, a Tandem

Computers, Inc. Nonstop-TXP. Citibank encouraged managers to use the personal computers for off-line report preparation and for on-line messaging via EMail.

But, Coughenour said, some users worried about keeping their data secure and continued to process paper transactions. Managers expressed concern about open access to information in local storage, he said, because they said that they felt employees who were authorized for general access could also access confidential information.

Users also perceived problems with sending their private messages through electronic mail. "Some of our people kept even routine correspon-

dence off the system because they were not quite sure who would see it," he said.

Citibank searched for a security system that would address these worries, Coughenour said. "I wanted to reassure people, to let them know that we recognized their concerns." But at the same time, he said, "I didn't want a solution that was so complicated it would keep people away from their [micros]."

Security system criteria

Citibank looked for a security tool that would provide:

- Privacy for local storage.
- Compatibility with telecommunications.

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The firm looked at hardware solutions that required users to open boxes with keys in order to access communications lines. He felt these systems were too difficult for users to install and use, he said. "I didn't want to raise more obstacles to acceptance and use of our system."

The hardware solutions were also too expensive. Coughenour said an average lock-and-key system costs about \$20,000 to secure three or four lines.

Citibank chose a software solution called P/C Privacy: Personal/Confidential from Metcal, Inc. that cost Citibank about \$100 for every personal computer it wanted to secure.

P/C Privacy software uses an algorithm to encrypt files. Users encrypt their files using a key phrase that they select. If someone who does not know the key phrase calls up the encrypted file in local storage, he will see a garbled message. All characters within the encrypted file fall into

"The thrust of our office automation effort is to enhance our management's capabilities, to integrate technology in a way that they can use it." — Richard W. Coughenour, Citibank

printable Ascii range, allowing the encrypted file to be sent via communications lines. Data recipients can decrypt the file only if they know the key phrase.

In selecting P/C Privacy, the deciding factor for us was that it is ideally suited both for office privacy and use with our EMail system," Coughenour said.

Another point in the product's favor, he said, is that it is installed micro by micro, instead of across the entire organization. Only users who want or need to protect their data have to use it. "Now, Citibank employees can deal with the privacy issue as they see fit," he said. "There's no need for bankwide policy statements on the subject."

Coughenour said he purchased and tested the firm's first P/C Privacy program about three months ago. Since then, he has acquired copies for users who expressed concern about data privacy.

He said it is too early to tell whether the software will alleviate users' concerns and help them accept the firm's office automation tool. "The reaction has been, 'I'll look at it, and maybe [I'll use it],' he said. "We might overcome their reservations."



OUT DATA NETWORK

NEWS

Package cuts outstanding claims for water heater firm

KANKAKEE, Ill.—A leading manufacturer of water heaters improved its credit management control and reduced outstanding claims by more than \$700,000 after converting from a manual card system to an accounts receivable software package.

Tom Van Himbergen, vice-president and controller of the Water Products Co. here, a division of A.O. Smith Corp., said that in 1980 he was given the task of strengthening the company's financial systems to make the company more profitable.

A primary concern was to tighten control of accounts receivable, Van Himbergen said. A.O. Smith had a manual system with 25,000 transaction cards, he said. The record-keep-

ing system had not been updated in recent years, and audit trails were difficult to follow, he said.

The old batch system provided almost no customer history and had limited cash posting capability, Van Himbergen said. Some of the cards were unusable because they were so worn, he added. Van Himbergen decided that a new approach was needed if A.O. Smith intended to hone its competitive marketing edge in the future.

Expanded customer base

"When we added two plants on the West Coast and then one in South Carolina, we broadened both our shipping and our customer base,"

Van Himbergen said. After evaluating several software packages, A.O. Smith selected the accounts receivable system from Management Science America, Inc. (MSA) of Atlanta.

The system was installed at the company's central computer facility in Milwaukee on two IBM 3033 multi-processors running under IBM's MVS/CICS operating system, said Russell Bordewick, manager of systems. "This was the first true on-line system on the hardware, and the technical people had some problems getting CICS up," he said. "But there have been no problems with the software."

The company needed quick, timely access to information, current credit

inquiry capabilities, automatically generated audit trails, real-time cash posting facilities and price remittance audits, said Ken Larson, assistant credit manager and a member of Van Himbergen's project team. It also needed a system that could capture the full credit history of customers and manage claims and discounts, he added.

The team Van Himbergen set up to investigate accounts receivable packages looked at three or four other packages, but none of the other vendors could show the team a similar manufacturing company that was using its product, Larson said. They decided against building a system in-house because it would take too long and cost too much, he said.

"The system gives us immediate credit exposure on all our customers," Larson said. "With the on-line screens, we know what was shipped and billed as recently as the most current posting. We know what's been paid, how it was applied and what's still outstanding. We're able to make

The old batch system provided almost no customer history and had limited cash posting capability. Some of the cards were unusable because they were so worn.

decisions based on trustworthy data."

Before, when customers made claims for discounts or price reductions, there was no way of going back to determine if they qualified, Larson said. With the new system, discounts are monitored against time and amount parameters set up by accounting managers, he said.

If the claim does not fit the parameters, the amount is automatically charged back to the customer, Larson said. This saves A.O. Smith as much as \$500,000 a year in unresolved claims that they once had no choice but to write off, he added.

The new system cut the average life of a claim in half and reduced the amount of outstanding claims from \$600,000 to less than \$200,000, Larson said.

The MSA accounts receivable system allows the user to get daily reports on audit trails, batch proof lists, proofs and balances, journals and closed-term histories, and four kinds of month-end aging reports, in sharp contrast to the two reports produced by the old system at the end of each month, Larson said.

Larson said he is looking forward to the next version of the package, which the company plans to install next spring, because it will give sorting options on aging reports or statements. Credit people like to review items by age, with the oldest items being on top of the page, Larson said. The MSA system sorts by reference numbers, which are not sequential at A.O. Smith because of multiple billing systems, he said.



NEWS

Decision software gives firm's data lateral mobility

DALLAS — Zale Corp. here has grown from one jewelry store, opened in Wichita Falls, Texas, by brothers William and Morris Zale in 1924, into the largest retail jewelry operation in the world.

Unusual among retailers, Zale's operations are vertically integrated. Zale purchases its diamonds from De Beers and then cuts, polishes and mounts them for sale in more than 1,500 worldwide stores, catalog showrooms and other outlets.

At Zale, a broad base of end users, including divisional managers and vice-presidents, use Comshare, Inc.'s System W decision support software running on an IBM 9084 mainframe. Many applications are in the corporate planning area, which is responsible for the strategic and annual business plans, general financial analysis, checkpoint review of capital expenditures and coordination and control of acquisitions and divestitures.

"Right now," said Gene Morphis, senior vice-president of corporate development, "we are using System W heavily in our strategic planning process. We maintain a five-year forecast by business unit that is constantly updated and the results consolidated."

Morphis pointed out that Zale's hierarchy model is not a typical one because of the firm's financing division. This credit division is influenced by the sales in other divisions and, in turn, passes its expenses back to those divisions.

"Most modeling languages are built to pass data up a hierarchy, and those products are a dime a dozen. What they don't do well is pass data across the model, or sideways. System W's data base structure makes it simple and straightforward to model the relationships between our credit and other divisions," Morphis said.

Sales-demand forecasting at Zale uses System W's statistics and consolidation capabilities. "We use [Standard Metropolitan Statistical Area] data that must be consolidated and allocated any number of ways to form market estimates," Morphis explained. "The same data is rolled up many different ways, and System W handles that effectively," he added.

"Working tool for management"

Catalog sales are a rapidly growing jewelry market, and a model has been developed that Zale uses to optimize the return on catalog showroom floor space. "This is one of the more exciting things we are doing. It provides a whole new dimension in evaluating stores. It is more than a primitive pro forma based on past years of sales figures. It is a working tool for line management," Morphis said.

In looking for a decision support package, only nonprocedural languages were considered. All considered at Zale agreed that the system needed to write something in a nonprocedural language is a fraction of the time needed in a procedural language, according to Morphis. Also, the software had to perform rigorous simultaneous equations. The software selected had to be capable of implementing the models Zale had already developed since 1980 on a

time-sharing service, he said.

All of the products were good, Morphis said, but he noted that System W's data handling and data base management capabilities made the difference. It was also important that System W could be used on IBM mainframes, IBM Personal Computers or on Comshare's time-sharing service.

"Putting professional tools in the hands of professional managers — that's the way I'd sum things up," Morphis said. "System W is a working tool in the mainframe, and we expect a larger community of users over time."


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NEWS



**TECHNOLOGICAL
TRENDS**
Larry Long

Q In the last six months a great deal has been said and written about expert systems. I've been asked to assess the feasibility of developing or purchasing an expert system for our company. I've located a company that claims to be developing an expert system in our field, but refuses to release any information on it. What do you believe the staying power of expert systems to be?

As buzzwords go, "expert systems" reigns supreme. Expert systems are now moving through the "clever and interesting" stage to the "useful" stage. The inexpensive, powerful technology that is just around the corner will catapult these

memory-intensive expert systems into the limelight by mid-to-late 1985. But, herein lies the problem.

Just as every piece of management software was labeled a decision support system (DSS) during the last seven years, everything from now on will be labeled an expert system. It was fine to call software "DSS" because it used existing technology. Anyway, DSS was just a new name for an old concept. But, "real" expert systems rely on radically different technology and ideas.

My fear is that we will see dozens, if not hundreds, of expert systems catering to every imaginable market over the next few years. Most will be no more than DSS that use traditional data structures. This will make it difficult for the novice consumer to distinguish between a knowledge-based expert system and a fraud. In the in-

evitable rush to get these systems to the market, I expect many to be released prematurely. Expert systems are here to stay, but during this shakeout period, test-drive a system from coast to coast before buying it.

Q I, along with 30 other middle managers, received a bluntly worded memo from the president of our company that encouraged us to become computer-literate as soon as possible. Details were omitted.

Because I am the only middle manager with any semblance of computer knowledge, at least 10 others have asked me for guidance. I consider myself to be computer-literate, but the president's memo did not define it, so I don't know. At what level of knowledge does one become computer-literate?

Companies promote it for their

employees. Parents demand it for their children. Those who have it believe they have a competitive edge. Those who don't have it seek it out. "It" is computer literacy. Interestingly, in both business and academia, a fundamental question is often unanswered: What is computer literacy?

Is it social issues, technical concepts, programming, application skills and/or hands-on exposure? If so, what is the proper mix? I define computer literacy in terms of what an individual will have achieved upon attaining computer literacy (vs. identifying topics of study). The computer literate person will:

- Be comfortable in the use and operation of a computer system.
- Be able to make the computer work for him through judicious generation or use of software.
- Be able to generate input to the computer and interpret output from the computer.
- Be able to understand how computers are impacting society, now and in the future.
- Be an intelligent consumer of computer-related products and services.

I would welcome feedback on this concept of computer literacy.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 890, Framingham, Mass. 01701.

Videoconference to be broadcast via satellite

PISCATAWAY, N.J. — A videoconference titled "Integrated Manufacturing Systems" will be aired via satellite across the U.S. Dec. 4 by the Institute of Electrical and Electronics Engineers (IEEE).

The videoconference will cover manufacturing product design; production systems design; manufacturing lines installation and operation; manufacturing management; and industrial systems education, said a spokesman for the IEEE.

The technical consultant for the conference is John Luber, of the Manufacturing Technology Institute, an internal corporate-level school of IBM.

Others appearing at the session will be William Becker, a lecturer on manufacturing systems; Edward Holden III, director of advanced engineering for manufacturing at IBM; Samuel B. Korin, director, IBM Manufacturing Technology Institute; and Donald L. Sigafoos, department chief, engineering and computer systems development, Richmond, works, AT&T Technologies.

The videoconference will be aired to universities, companies and IEEE-sponsored locations.

The fee schedule and information for establishing a site may be obtained from the IEEE Continuing Education Department, IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08864.



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NEWS

Micro system keeps court cases at reporters' fingertips

WASHINGTON, D.C. — When the Reporter's Committee on Freedom of the Press, founded 12 years ago here, began to seek information through freedom of information statutes in the 1970s, the committee found it needed a fast, cost-effective method of tracking cases.

Under the direction of Newhouse Newspapers veteran reporter Jack Landau, the committee last year acquired a microcomputer system that could trace court docket numbers, monitor the status of individuals involved in litigation or controversial journalism around the country and be learned with relative ease.

The system is the 32:16 from For-

tune Systems Corp. of Redwood City, Calif. The committee first installed a 32:16 with 768K bytes of main memory and a 30M-byte hard disk, running AT&T's Unix operating system. After reviewing what its needs will be this winter, the committee acquired 1M bytes of main memory.

The committee operates four terminals in-house and one at Landau's home. None of the users working with the system are trained in DP; two are lawyer/journalists and a third is a retired newspaper editor. All are picking up expertise in computers along the way, according to Robert Becker, a staff attorney with the committee.

"This is the perfect network sys-

tem for a small organization like ours, which needs access to a word processing system, a data base and a spreadsheet," Landau said. "We find it extremely easy to use, and we've been able to show law and journalism interns how to use it in a minimal amount of time."

Initially, the committee required a strong word processing program. One of the major functions of any organization that operates on a nonprofit basis, Landau said, is fund-raising and communications, and Fortune:Word — Fortune's proprietary word processing system — fit that requirement.

But shortly after the system's installation, Landau and his staff de-

cided that a strong data base for tracking cases, along with a spreadsheet to permit more in-house budget estimating and data exchange, would improve productivity. "We've set up a single information inventory system using [Microsoft Corp.'s] Multiplan," he said. "We can easily make entries using Multiplan's textual capabilities, then switch to Fortune:Word. It seems we've pushed the system pretty hard, beyond its usual functions, and it has responded well."

At present, the Reporter's Committee staff is tracking more than 800 cases around the country — most of them still pending. The staff is working on entering cases into the data base. "We are nowhere near getting 12 years of files into the system yet," Becker said. From the cases on file and in the data base, the staff responds to several thousand telephone calls each year from journalists and attorneys seeking information.

The range of functions that office automation has made available to the committee continues to increase, according to Landau. The Reporter's Committee now is preparing data bases of potential contributors and is processing mailings through Fortune:Word to individuals who support the committee activity. In addition, a series of legal dissertations and education programs for journalists around the country is being prepared with the help of the system.

New CSR training for IBM 308X and XA reduces stress and high blood pressure.

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Computer meet to feature law, communications

PHOENIX — Judge Harold H. Greene, who presided over the landmark divestiture of AT&T, will deliver the keynote address at the Third Annual Advanced Computer Law Invitational to be held at the Pulte Resort at Squaw Peak here Jan. 14-16.

According to the sponsors, the Arizona Law and Technology Institute and the Arizona State University College of Law, the event will be a conference and workshop on the emerging legal issues resulting from the convergence of the computer and communications industries and recent regulatory changes relating to telecommunications. The conference faculty is scheduled to include more than 30 national and international experts who will provide an advanced briefing for industry executives.

Scheduled speakers include J. David Hann, president of GTE Telecommunications Corp.; Howard Albel, senior vice-president and general counsel of ITT; Howard Trimens, vice-president and general counsel of AT&T; Hugh Barrett, senior vice-president of First City Bancorp.; and Kenneth Cox, senior vice-president of MCI Communications Corp.

The cost for the Invitational is \$545.

Information is available from the Arizona Law and Technology Institute, c/o Arizona State University College of Law, Tempe, Ariz. 85287.

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NEWS

COM generator eases microfiche duplication woes

REDONDO BEACH, Calif. — When TRW, Inc. reorganized in 1981, company management emphasized the need to reduce data processing costs. As a result, the computer operations department of the company's Operations and Support Group closely examined its computer-output microfiche (COM) operation.

The company estimated the cost of an impact-printed original page at 12.5 cents; a high-speed laser-printed page at 3.5 cents; and a microfiche of 270 pages at \$1.37, or 0.05 cents a page. Each duplicate microfiche cost 17 cents, according to Emanuel Valdes, manager of computer operations.

Valdes's department is responsible for all business data processing for

five operating groups of TRW's Electronic & Defense sector here. The business processing needs include accounts payable, accounts receivable, inventory control, manufacturing systems and management reporting.

8.2 million pages a month

The department's DP equipment includes two IBM 3081 mainframes, an IBM 3033 mainframe, an IBM Series/1 minicomputer, four high-speed laser paper printers and two impact paper printers. The department produces about 8.2 million pages of output each month.

"We realized that many departments wanted to use COM because of the potential cost and space savings,



The tape library at TRW

but they were not satisfied with the quality we were producing," said Dan Williams, a computer operations

shift supervisor. "So we evaluated dry COM units that were reliable enough to go on-line, and the [Eastman Kodak Co.] Komstar 200 microfilm processor was the best on the market. An on-line system substantially increases productivity."

"We had a lot of resistance when we were using the earlier, wet COM equipment, and with good reason," Valdes said. "We could not service the users as quickly as needed because the COM hardware was unreliable. Even if we did turn the work around fast enough, we frequently had to redo jobs because quality was inconsistent."

No operator intervention required

One advantage to the Komstar 200 unit, Valdes noted, is that it is an on-line device that requires no operator intervention. TRW's computer system sees it as just another high-speed printer.

The Komstar unit, like the other printers, functions as a computer peripheral, but prints on film rather than paper. The device has its own front-end minicomputer, so it functions on-line without requiring special programming by the host computer. Microfiche are exposed, cut and processed in an automatic, straight-line operation.

Users who need many duplicates realize the greatest savings. The payroll department probably benefits the most because it needs many precise duplicates, Williams said. Duplicates are produced by a Kodak Ekafiche duplicator, which can generate single or multiple microfiche copies from an original at a maximum rate of 1,000 copies per hour.

"We have reports that required 50 magnetic tapes, which an operator had to load onto the off-line, wet COM unit," Williams said. "The process was not only time-consuming and labor-intensive, but it also created problems with tape drives and operator error."

Direct transmission

Now, data can be transmitted directly to the on-line Komstar unit from the mainframe computer, eliminating operator intervention. Operators remove the finished, stacked microfiche from the receiving tray and load film.

The department presently generates more than 3 million frames a month on the Komstar processor and about 80,000 duplicate microfiche on the Ekafiche duplicator.

The computer operations department's COM volume has increased 500% since installation of the dry processing unit, bringing the total COM volume to 40% of the department's total output, according to Valdes. The Komstar unit produces almost half the volume run on the four laser paper printers, he added.

The conversion to dry processing took three days. The department had some quality problems in the beginning because no quality control system was employed by the 40 operators who used the equipment. Valdes cited Kodak's aid in establishing a quality procedure. Now, a control microfiche is run at the beginning of each of three shifts. He said the equipment is also reliable — it was available 99.5% of the time in an 18-month period.

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NEWS

Government official to address telecommunications gathering

HONOLULU — David Markey, U.S. assistant secretary of Commerce for Communications and Informations, will be among the speakers at the seventh Pacific Telecommunications Conference (PTC), Jan. 13-15 in Honolulu.

The conference will be held at the Sheraton-Waikiki hotel and will address how digital technology affects the development of telecommunications services in the Pacific. Other scheduled speakers at the conference include Martin Fournier of Teleglobe Canada and Michio Nagai of United Nations University.

On Jan. 18, J.C. Desorme, president

and chief executive officer of Teleglobe Canada, will discuss "Education in a Digital World." Also on Jan. 18, groups will meet to discuss problems and issues in teleconferencing, transborder data flow and training.

Richard Collins, director general and chief executive officer of the International Telecommunications Satellite Organization, will discuss international satellite service.

Registration for the conference is \$360 for members of the Pacific Telecommunications Council and \$396 for nonmembers. PTC is at Suite 308, 1110 University Ave., Honolulu, Hawaii, 96826.

Computer conference to cover applications in CIM technology

BURLINGAME, Calif. — George Metster, vice-president and general manager of McDonnell Douglas Automation Co.'s computer-integrated technology division, will present the keynote address at the Computers in Manufacturing conference Nov. 28-30.

The Computers in Manufacturing conference will focus on the application of new hardware and software and on communication and management techniques in Computer-Integrated Manufacturing (CIM), according to its sponsors, the National Institute for Management Research. The conference will also examine the

integration of the data processing department in CIM and the uses of production control and materials handling.

All attendees will reportedly receive a 1,000-page reference notebook on CIM.

The conference will be held at the Hyatt Burlingame Hotel here. Registration is priced at \$605 per person. Group registration is \$295 per person.

Additional information on the conference is available from the National Institute for Management Research, P.O. Box 8727, Santa Monica, Calif. 90408.

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NEWS

System licks candy maker's inventory control problems

OAKLAND, Calif. — Rapid growth of a candy maker here made inventory control and product tracking a time-consuming task.

According to Controller Glenn Casebolt of Herman Goelitz Candy Co., two years ago the company computerized its product inventory system in order to provide greater control over the com-

pany's candy manufacturing processes. Goelitz Candy makes Jelly Belly jelly beans, candy corn, Jordan almonds and bridge mixes.

When Casebolt joined Goelitz Candy, he knew just what he wanted in a computer system, having seen several companies go through the conversion process.

"Basically, I did not want

to hire our own programmers," Casebolt said. "I wanted a package that was specially geared to the food industry."

Shopping around

A six-month selection process had Casebolt looking at quite a variety of products, including minicomputers from both IBM and Wang

Laboratories, Inc.

A software package that was geared specifically to the food industry was of particular importance in his selection, according to Casebolt. "I bought the software first and then bought the hardware to go along with it," he said.

In May, Goelitz Candy completed installation of a

Management Associates, Inc., MAI 8010 hardware/software package.

The company's system encompasses both its Oakland, Calif., and Chicago offices. It includes a 1M-byte memory, a 144K-byte disk drive, a magnetic tape streaming drive, 10 VDIs (four for each office), five printers and three IBM Personal Computer interfaces.

Casebolt now uses a Personal Computer, but, according to the controller, the company is planning to expand its number of Personal Computers in the future.

According to Casebolt, before the installation of the computer system, the company used a service bureau to process its product orders, sales analyses and accounts receivable. All invoices, bills, sales analysis reports and accounts receivable reports would be back at the candy company in about 48 hours, Casebolt said.

Instant updates

With the new system, Casebolt said, members of the order department receive instant information updates on any sales, billings and accounts receivable.

"We can, in a much easier fashion, keep tabs on dated [candy] products — when they were produced and when they went to market," according to Casebolt. "Plus, the more efficient operation of our offices" means less overhead, and as a result, "candy prices probably won't be rising as rapidly as they might without the system."

"The system provides for almost every type of transaction, including marketing, manufacturing, cost and inventory controls" of finished goods, he said.

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NEWS



OFF THE PRESS
George Hensler

BOOK REVIEWS

DATA ADMINISTRATION

By William Durell

The author makes the case for the data administrator as the person to "plan, document, manage and control the information resources of an entire organization." Analysts and programmers typically manage the data for the systems and programs directly under their control. The data administrator takes the larger corporate view and uses data dictionaries and data bases as his tools of control.

Durell argues for data dictionaries, describing them in much more glowing terms than their current usage in DP departments would seem appropriate. Data dictionaries are just one area where the worlds of the data administrator and the data processor diverge in practice and theory. Data processors tend to dislike rigid data definitions forced on them; they think in terms of systems, not data; they resist the use of data formatted and defined by someone else.

Data administrators are advised to seek out the authority from management to prescribe data standards on the independent-minded DP workers. Of course, the active cooperation of those in DP or end-user departments would further the data administrator's goal. There are two questions: Can he get this cooperation? And does he deserve it?

Hardcover, 303 pages, \$32.95, ISBN 0-07-018391-0. McGraw-Hill Book Co., 1221 Avenue of the Americas, New York, N.Y. 10020.

HOW TO WRITE PAPERS AND REPORTS ABOUT COMPUTER TECHNOLOGY

By Charles Sides

If you did not foresee writing as much as you do on the job, then you probably are not prepared to do it well. Writing proposals, specifications and documentation may be the most unexpected and irritating part of a computer professional's work. Writing may also be the most important, according to the author.

The first lesson is a maxim for all writers: Write to your audience. That means judging what level of detail and jargon your readers can take. Writing over or under the heads of readers will lose their attention quickly.

Next, analyze the document's purpose. Here you determine the problem, the technical issues and exactly what the paper will do for the reader.

A working structure is necessary — what the author calls a Visual Organization System, which is known to everyone else as an outline. Getting organized leads to getting information and then to explaining the subject. This section is the book's best. Six types of definition techniques are discussed: formal/informal, metaphorical, stipulative, contextual, operational and divisional. The words sound pedantic, but the book clearly shows how each specifies a type of sentence commonly found in documentation.

A divisional definition, for instance, is reflected in this sentence:

"[Digital Equipment Corp.'s] Decimate is a stand-alone personal computer which is comprised of a [CPU], a video display screen and a keyboard terminal." The writer must understand that when a reader sees a divisional definition, he expects to read next about each part mentioned in order.

There is a good deal more in this slim book, with much of it presenting good writing techniques. Some of the discussion is linked to the specific problems of communication in the computer industry. More would have been better.

Paperback, 142 pages, \$14.95, ISBN 0-89485-036-3. ISI Press, 3501 Market St., Philadelphia, Pa. 19104.

ART AND THE COMPUTER

By Melvin Frieselt

If you are, by chance, in the midst

of the practical problem of coaxing business graphics from computer to slide or paper, take a moment to rest your eyes on an arresting gallery of images. No graphic will seem too difficult to produce after leafing through these 300 striking examples of what the computer can do, given time, software and an artist in control.

Note particularly Picture 147, "Foggy Chessmen," where the pieces are reflected in the board and softened in fog; Picture 168, "Down the Drain," a sphere falling into a gray and purple-striped vortex; and Picture 282, "Sunflowers Watching the Sun," where each flower is angled slightly differently toward the light.

A short, preliminary section discusses animation and computer-aided design. Next to each color picture, a caption tells who created the image

and where. Sometimes the author tells how the picture was made. More such explanations and in greater detail would have added to the appreciation of the art and the difficulty of its creation.

Paperback, 240 pages, \$29.95 (hardcover, \$39.95), ISBN 0-07-050899-2. McGraw-Hill Book Co., 1221 Avenue of the Americas, New York, N.Y. 10020.

BOOKS OF NOTE

THE SOFTWARE CATALOG: BUSINESS SOFTWARE lists 5,000 programs for all major micro and mini produced from the International Software Database. Paperback, 606 pages, \$35, ISBN 0-444-00094-5.

See REVIEWS page 75

NEWS

Insurer upgrades sales system with training, printer

SPRINGFIELD, Mass. — When a large insurance company here decided to upgrade the sales support system in its agency offices across the country, 13 manufacturers were in the running to become the dot matrix printer supplier.

Massachusetts Mutual Life Insurance Co. developed Respond III-PC, which consists of the IBM Personal Computer 3270 running under IBM's DOS 2.0, printers, in-house-developed sales applications software, Multimate International, Inc.'s Multimate word processing and Lotus Development Corp.'s 1-2-3, according to Richard Coburn, second vice-president of Mass. Mutual. The system was designed to bring the home of-

fice's Amdahl Corp. mainframe computer capabilities into the widely scattered agency offices, he said. The company reasoned that by capitalizing on the computer's ability to produce sales illustrations, complicated spreadsheets, annual review letters and other kinds of routine correspondence quickly, the Mass. Mutual agent can spend more time providing service to current policyholders and seeking new ones, Coburn said.

In February 1983, the company announced its push to put Respond III-PC in place, Coburn said. It organized two- and three-day training programs for its clerical staff and agents in the use of the system's

word processing package and in the 1-2-3 package, he said.

Most of the software was written in-house with a high priority on user friendliness, Coburn said. Programs use prompting, menus, error messages, validity checking and come with reference manuals so users can train themselves, he added.

The company had thoroughly researched sources of hardware and software for at least 30 days in-house, Coburn said. It also arranged for quantity purchases at high-discount prices by dealing directly with vendors and committing to high volumes to take advantage of quantity price breaks, he said.

Thirteen dot matrix printers were reviewed prior to selection, Coburn said. Nine of those were put through an extensive evaluation for more than a month, he added, while the remaining four were given cursory examinations.

The company's technical staff did hands-on evaluations to determine features such as speed, reliability, noise level and clarity of characters, he said. They also contacted other users as reference checks and investigated the reputation and size of the vendors. One guideline was to stay away from small manufacturers to avoid buying machines that would not have support in the future if the small business failed, he said.

Rugged system

Mass. Mutual decided on the 3024 model, manufactured in Waynesboro, Va., by Genicom Corp., Coburn said, because it was "rugged enough to take high-volume, eight-hour-a-day usage." Mass. Mutual performs its own maintenance, so a primary consideration was reliability, he said. "There are less expensive dot matrix printers on the market, but nothing comparable on a price/performance basis," he added.

Other features important to the company included its speed (200 char./sec draft and 40 char./sec near-letter-quality), its quietness, the readability of the near-letter-quality print style, the long ribbon life and its ease of operation, Coburn said.

The company uses the printers with about half of its 500 installed systems, Coburn said. Mass. Mutual originally purchased Genicom's Model 3184 printers, the only suitable type available at the time, he said. It switched to the Model 3024 when it came out at \$306 less than the 3184, he said, because it did not need the Model 3184's ability to upgrade to other things, such as color printing.

Until now, when you operated the PC in the terminal emulation mode, keys had to be redefined.

For inexperienced users, that could be both awkward and time-consuming.

What's more, it's always required quite a few keystrokes to engage a PC-to-mainframe function such as file transferring.

The result again was an increase in the chance for human error.

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REVIEWS from page 74

Elsevier Science Publishing Co., 52 Vanderbilt Ave., New York, N.Y. 10017.

MICROCOMPUTER SOFTWARE
BUTYER'S GUIDE reviews the top-selling word processing, spreadsheet, data base management and integrated software packages. The guide also includes benchmark comparisons of these packages; by Tony Webster and Richard Champion (with the cooperation of Dataparc Research Corp.), Paperback, 422 pages, \$19.95, ISBN 0-07-068967-9. McGraw-Hill Book Co., Professional and General Books, 1221 Avenue of the Americas, New York, N.Y. 10020.

UNIX FOR PEOPLE provides practical guidance as well as theory for the experiential learning of the operating system; by Peter Birns, Patrick Brown and John Muenster. Hardcover, 628 pages, \$29.95, ISBN 0-15-987468-0. Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632.

Publishers wishing to have their books considered for review can direct books, prepublication galley, press releases, catalogs or other information to George Harrar, Book Reviews Editor, Computerworld, P.O. Box 800, 375 Cochituate Road, Framingham, Mass. 01701.

NEWS

CALENDAR

WEEK OF NOVEMBER 18

NOVEMBER 19, NEW YORK — Syed Training Forum. Contact: Syed, Inc., 35 W. 36th St., New York, N.Y. 10001.

NOVEMBER 19, NEW YORK — Introduction to the IBM Personal Computer. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123. Also being held Nov. 26 in New York.

NOVEMBER 19, NEW YORK — Spreadsheets Using Lotus 1-2-3.

Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

NOVEMBER 19-20, MINNEAPOLIS — Operating Systems for Personal Computers. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

NOVEMBER 19-20, BOSTON — Discovering Lotus 1-2-3. Contact: Data-Tech Institute, P.O. Box 569, 386 Franklin Ave., Nutley, N.J. 07110.

NOVEMBER 19-21, PALO ALTO, CALIF. — Structured Techniques Using Fourth-Generation Languages. Contact: Software Institute of America, 9 Windsor St., Andover, Mass. 01810. Also being held Dec. 18-20 in Dallas.

NOVEMBER 19-21, BOSTON — Project Management & Control.

Contact: QED Information Sciences, Inc., P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 19-21, NEW DELHI — International Conference on Computers and Technology. Contact: J.K. Hama, IBM, Corporate Headquarters, Armonk, N.Y. 10604.

NOVEMBER 19-22, TORONTO — The 18th Annual Canadian Computer Show and Conference. Contact: Canadian Information Processing Society, Fifth Floor, 243 College St., Toronto, Canada M5T 2V1.

NOVEMBER 20, NEW YORK — Symposium for 1-2-3 Users. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

NOVEMBER 20, NEW YORK — Word Processing with Multimate.

Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh

Ave., New York, N.Y. 10123. Also being held Nov. 26 in New York.

NOVEMBER 20-22, AMSTERDAM — Videotext International Conference and Exhibition. Contact: On-line Conference Ltd., Pinner Green House, Ash Hill Drive, Pinner HA5 2AE, Middlesex, UK.

NOVEMBER 21-26, SHANGHAI — China International Microelectronics/Computer Exhibition and Conference. Contact: Harry C. Lepinski, American Exhibition Services International, Inc., P.O. Box 66573, O'Hare International Airport, Chicago, Ill. 60666.

NOVEMBER 21, NEW YORK — Advanced Multimate. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

NOVEMBER 21, NEW YORK — Advanced Displaywrite II. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

NOVEMBER 22-30, MOSCOW — Systemotronics '84. Contact: Harry C. Lepinski, American Exhibition Services International, Inc., P.O. Box 66573, O'Hare International Airport, Chicago, Ill. 60666.

NOVEMBER 23-25, PACIFIC GROVE, CALIF. — Forth Modification Laboratory. Contact: Forth Interest Group, P.O. Box 1106, San Carlos, Calif. 94070.

WEEK OF NOVEMBER 25

NOVEMBER 26-27, INDIANAPOLIS — Expanding Lotus 1-2-3 Applications. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

NOVEMBER 26-28, WASHINGTON, D.C. — LMS and Other Protocols. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 26-28, CHICAGO — Cellular Communications '84: The Industry Conference. Contact: On-line Conference, Inc., Suite 1106, 2 Penn Plaza, New York, N.Y. 10121.

NOVEMBER 26-28, SAN FRANCISCO — Computer Graphics for Business. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 26-28, PINE MOUNTAIN, GA. — Data Communications: Bringing You Up-To-Date. Contact: Institute for Communications and Information Management, P.O. Box 8, Pine Mountain, Ga. 31822.

NOVEMBER 26-28, WASHINGTON, D.C. — Integrating Microcomputers into Corporate Environments. Contact: Systems Technology Forum, 9000 Fern Park Drive, Burke, Va. 22015.

NOVEMBER 26-28, TEANECK, N.J. — Project Management Control. Contact: QED Information Sciences, Inc., P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 26-29, COLUMBIA, MD. — Data Base Machines In-Depth. Contact: Continuing Education Institute, 10899 Wilshire Blvd., Los Angeles, Calif. 90024.

NOVEMBER 26-29, LOS ANGELES — Data Base Communications Components. Contact: Institute for Advanced Technology, 66 W. 55th St., New York, N.Y. 10019.

NOVEMBER 26-29, COLUMBUS, OHIO — DOB/VSE With Explores/XP. Contact: Betty Joyce, Education

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Coordinator, Goal Systems International, Inc., 6455 N. High St., Columbus, Ohio 43214.

NOVEMBER 26-30, BOSTON — Systems Analysis. Contact: QED Information Sciences, Inc., P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 26-30, DALLAS — The James Martin Seminar. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 26-30, NEW YORK — IBM Data Base Design. Contact: Syed, Inc., 35 W. 39th St., New York, N.Y. 10001.

NOVEMBER 27, NEW YORK — Introduction to Framework. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

NOVEMBER 27-28, TAMPA, FLA. — Realistic Applications of Personal Computers in Business: An Executive Hands-On Experience. Contact: Lucy Bell Burton, Post, Marwick, Mitchell & Co., 810 Seventh Ave., New York, N.Y. 10019.

NOVEMBER 27-28, CHICAGO — IBM vs. AT&T: Round One. Contact: Marilyn Chastren, The DMW Group, Inc., 2020 Hogback Road, Ann Arbor, Mich. 48104.

NOVEMBER 27-29, FORT LAUDERDALE, FLA. — Telephone Systems: Their Selection, Operation and Management. Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

NOVEMBER 27-29, CAMBRIDGE, MASS. — The 1984 Hammer Information Systems Conference. Contact: Hammer and Co., 5 Cambridge Center, Cambridge, Mass. 02142.

NOVEMBER 27-29, SAN DIEGO — Personal Computing at the Crossroads. Contact: Lynn Bentley, Gartner Group, Inc., P.O. Box 10212, 72 Cummings Point Road, Stamford, Conn. 06604.

NOVEMBER 27-30, BOSTON — National Data Base and Fourth-Generation Language Symposium. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810.

NOVEMBER 27-30, DALLAS — Leadership Managing & Influencing People. Contact: QED Information Sciences, Inc., P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 27-30, PHILADELPHIA — Modern Patterns Recognition Systems. Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45406, 6306 Artaona Place, Los Angeles, Calif. 90046.

NOVEMBER 27-30, BOSTON — Designing Effective Man/Machine Interfaces. Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45406, 6306 Artaona Place, Los Angeles, Calif. 90046.

NOVEMBER 27-30, LOS ANGELES — Data Communications. Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45406, 6306 Artaona Place, Los Angeles, Calif. 90046.

NOVEMBER 27-30, NEW YORK — Introduction to Database. Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

NOVEMBER 28-29, BALTIMORE — The World of Electronic Data Interchange. Contact: Transportation

Data Coordination Committee, 1101 Seventh St. N.W., Washington, D.C. 20004.

NOVEMBER 28-29, SAN DIEGO — Computer Vertical Markets. Contact: Carol Every, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10008.

NOVEMBER 28-30, MACAO — The First Asian Digital Equipment Corp.-Compatible Exposition and Conference (Dexpo Asia '84). Contact: Dexpo Asia '84, Expoconul International, 55 Princeton-Hightstown Road, Princeton Junction, N.J. 08550.

NOVEMBER 28-30, DALLAS — 1984 Winter Simulation Conference. Contact: Udo Paech, Department of Computer Science, College of Engineering, Texas A&M University, College Station, Texas 77843.

NOVEMBER 28-30, PARSIP-

PANY, N.J. — Job Control Language. Contact: Chubb Institute, 8 Sylvan Way, Parsippany, N.J. 07054.

NOVEMBER 28-30, DENVER — Relational Data Bases. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810.

NOVEMBER 28-30, SAN FRANCISCO — Computers in Manufacturing. Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90408.

NOVEMBER 28-30, BELTSVILLE, MD. — Structured Testing. Contact: Center for Management Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

NOVEMBER 28-30, BOSTON — Information Center Software Selection. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 28-30, LOS ANGELES — Unix Application Forum. Contact: Mag Basted, Yates Ventures, Suite 111, 4903 El Camino Real, Los Altos, Calif. 94022.

NOVEMBER 28-30, LOS ANGELES — Data Modeling and Conceptual Data Base Design. Contact: Jack Boldkin, Skyline Information Systems, Suite 900, 5250 Wilshire Blvd., Los Angeles, Calif. 90010.

NOVEMBER 28-30, TUCSON, ARIZ. — Fifth International Conference on Information Systems. Contact: James Nunnemacher, College of Business, University of Arizona, Tucson, Ariz. 85721.

NOVEMBER 28-30, NEW YORK — An In-Depth Study of IBM's Architecture for Data Communications. Contact: Systems Technology Forum, 9000 Fern Park Drive, Burke, Va. 22015.



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VIEWPOINT

Fit to be tried



THE DATA
CENTER
John P. Murray

Many of us are familiar with the phenomenon of the employee who falls in one information processing installation and who moves on to some other installation and does well, sometimes very well, in that new position. In some instances the change can be dramatic.

While every case is to some degree unique, there do appear to be two salient factors that have a strong effect on how a particular employee performs in a particular installation. These factors have to do with the environment that exists in the installation and with the chemistry between the employee, those he works with and the management of the installation. It follows then, if more time and attention are applied to consideration of these factors by both potential employers and prospective employees, some of the problems that occur relative to dissatisfaction (on both sides) and with excessive turnover, could be mitigated.

Is there a right or a wrong environment? Who can say? It depends,

at least to some degree, upon the interest and the personality of the individual. It seems, however, that certain environments are more conducive to eventual success for a given individual than are others.

It could be argued, in fact it has been argued, that the use of leading-edge information processing tools and techniques, a fast pace, a rapid rate of growth and change are viewed as positive factors, and that they make a job highly desirable. As a general rule, that is a reasonable enough statement, but it cannot be universally applied.

Some people, some very skilled and competent people, are going to feel threatened by a fast-paced, leading-edge environment. The fact that these people will find themselves uncomfortable in such an environment clearly has a deleterious effect on their work and on their contribution. In such a situation, changing to a more static, less dynamic environment can often prove to be the tonic needed to bring out the employee's best effort.

Conversely, the person who sees himself as a changer, a doer, will not be comfortable, nor will he likely remain long in an installation where

there is little real challenge or opportunity. So, the match between the technical environment and the individual can, and does, influence the performance of the employee.

When considering the issue of an installation's environment, the technical factor is not the only component to consider. Consideration should also be given to the pace of the installation. This has less to do with the particular technical state of the installation and more with the "feel" of the installation. Is there a sense of

urgency, a pressure to get things done in a controlled manner? Does the function operate in a crisis mode, where panic appears to be the salient feature? Is there a decidedly laid-back aura to the environment? The applicant should attempt to determine the pace of the installation, and consider the appropriateness of that environment with regard to his particular temperament.

Identically, as a part of the process to make a good match between prospective employee and employer, these environmental issues need to be presented fairly by the employer. Too often the employer tends to "sell" the job. Too often the prospective employee ignores those little warnings

the mind sends out about a bad match. The eventual outcome is often disappointing for all concerned.

The chemistry between the employee and the boss, and between him and his peers, is another area that should not be ignored. Organizations develop cultures, some good, some bad, some simply bland. Over time, many of the long-term employees within the organization tend to take on various traits of that culture. One facet of the hiring process should be to describe, as fully and as candidly as possible to the employee, the cultural aspects of the organization.

The person who views himself as a creative type, a free spirit, who does best unfettered by rules and conventions, will probably not be satisfied or remain long in an organization governed by formula rules that places a great deal of restraint on the individual actions of the employees. Given such a circumstance, a very talented person may not live up to his potential. One reason for failure will have to do with expending too much time and energy chafing under the rules.

Someone else, however, just as talented, will feel very comfortable, probably even secure in such an environment. They no doubt will do very well.

Part of the interview process, for both the employer and the employee, should focus on the determination of the chemistry between the two. This cannot always be accomplished.

See *VIEWPOINT* page 84

Murray is director of management information services for Raytheon Corp., Madison, Wis., and author of *Management Information Systems as a Corporate Resource*, published by Dow Jones-Irwin.



Microcomputer training for the administrative staff



HUMAN
COMPUTING
Jack Stone

It was only a modest news squib in *The New York Times* that I read, but the announcement of a personal computer "especially designed for secretaries" clearly opens up possibilities for both a new universe of personal computer usage and a major contribution to advancing the art of office automation.

The idea of supplying machines particularly oriented to secretaries — and enabling secretaries to work with spreadsheets, develop graphics displays and process data files in addition to their conventional word processing responsibilities — is a natural. Clerks, secretaries and other administrative personnel have a terrific background of information processing on which to build more advanced skills. What a wonderful way to broaden their jobs! Give them electronic tools so that they can take on more challenging and interesting work and handle it in an effective, productive manner.

In this column, I want to share some thoughts on training administrative personnel that I have gathered over the years; but first, some initial comments.

Surely, there are a awful lot of administrative personnel who have been saddled with manual

processing chores that can be handled by the personal computer. Certainly word processing systems have proved their worth in the productivity arena when compared with the capabilities of electric typewriters. And we can extrapolate from there: How many millions of hours have been frittered away by administrative people in the generation of hand-drawn bar graphs and pie charts that often wind up being unsatisfactory? How much time has been wasted on the maintenance and processing of 3- by 5-in. card files or on generating

terms aspects of what they were doing. I was forced to address this frontline issue: how to ease the staff into new, more complex applications — in contrast with word processing — without burdening them with technical detail and turning them off before they returned to their jobs.

Now the academicians may take a dim view of my strategy, but what I find works is the design of the training as a series of problem-solving experiences, also known as "cookbook" training. To be sure, this is an idea anathema on the college campus, but it does the job in the industrial setting. The reason for this approach stems from the basic goal of administrative students: the understanding of how to solve those particular information handling problems they face on a daily basis. Cookbook training, in my experience, is applicable to the administrative staff because they tend to operate in accordance with standard operating procedures.

The trainer should select an example from one application area in the business office — an easy one — and drill the students on the computerized solution to it until they get it down pat. Naturally, this takes place in the hands-on environment, using the exact hardware/software configuration being employed in the offices. The instructor should bring the students along step-by-step, covering the procedures for setting up the problem in the computer, entering data, processing the data and obtaining output. When and if the students get this all straight, the trainer continues on to another, more difficult example in the same application area. Finally, the students are given a workshop in which they attempt to solve additional problems on their own with the instructor present to offer aid and guidance as necessary.

I was forced to address this frontline issue: how to ease the [administrative] staff into new, more complex applications — in contrast with word processing — without burdening them with technical detail and turning them off.

budget spreads with paper and pencil — only to have to redo them time and again?

On numerous occasions in recent times, I have trained administrative staffs, then employing small microcomputers for word processing, to raise their sights into higher echelons of performance, most notably, data processing. They had little difficulty with DF operator keyboarding, but became glassy-eyed when I attempted to explain the sys-

Stone is an independent management consultant, educator and writer, specializing in DP human communications and personnel development, based in Washington, D.C.

THE MOST IMPORTANT FEATURE YOU'LL FIND IN DIGITAL'S TELEPRINTERS IS THE COMMITMENT BEHIND THEM.

When Digital pioneered the concept of interactive computing some 25 years ago, an interesting side benefit occurred. Out of necessity, we had to develop our first teleprinter.

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Each new model introduced since the LA36 teleprinter has been yet another demonstration of our commitment to the needs of the marketplace. And an equally strong demonstration of the market's commitment to us. For the popularity of our products, in several cases, has actually helped drive the industry to adopt new standards. With the introduction of the LA36 teleprinter, for instance, came the wide acceptance of the 300 baud communications rate. And the LA120™ teleprinter helped popularize the faster 1200 baud rate.

Digital's commitment to the teleprinter market remains rock-solid. Our terminals manufacturing plant in Arizona currently produces more teleprinters than ever before. So as long as there's a need for

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VIEWPOINT

'Techno-Bandits' fails to close book on Software AG affair



READER'S
PLATFORM
Howard Karter

The excerpt from the forthcoming book *Techno-Bandits* (CW, Sept. 24) covered the affair of Software AG of North America in considerable detail. Yet the excerpt, like the reporting at the time, failed to explore certain questions that have remained unanswered up to today.

I find it curious that none of these questions have been raised; they make me wonder if the whole story has been adequately explored, how well trained Federal Bureau of Inves-

tigation personnel are when it comes to computers and how adept they are at combating computer-related crimes.

I am not suggesting anything sinister or conspiratorial — simply that these issues deserve to be answered.

Consider these questions and scenarios.

Insistence on obtaining source code

Why were the Russians so insistent on having the source code in the first place?

They must have been able to deduce that the product operated correctly by and large — after all, it had withstood the roughest test of all, that of the marketplace — and most,

U.S. users seemed able to get along without source code.

Because they were having so much difficulty obtaining the source code, why risk the success of the whole operation by trying to get the one part that was not, strictly speaking, necessary to have?

Disassemble object code

The Russians have in common with other human beings the ability to be counterproductively single-minded, bull-headed and plain foolish, so let's assume that for their own arcane reasons, they insisted on having source code.

Early on, it would have been clear that getting their hands on the source

code would not be an easy job.

In that case, why did they not simply buy a disassembler (or write their own) and disassemble the object code? Surely the Russians have had experience with reverse engineering.

Form dummy company

Continuing this line of thought, how about forming a dummy company as a front, and then hiring a consulting company to disassemble the object code? That might not yield perfect results, but would surely go a long way toward giving the Russians the source code they wanted.

Marc De Geyer's clients must have sensed the difficulty of using at least semilegitimate methods to obtain the source code.

These questions make me wonder if the whole story has been adequately explored, how well trained FBI personnel are when it comes to computers and how adept they are at combating computer-related crimes.

Given the unending series of obstacles to this course of action, why not simply try to get the information in — as John Houseman might say — the old-fashioned way, by bribery, blackmail or otherwise getting a hold on a company executive who could then make a copy without anyone being the wiser?

Golden opportunity for FBI

Software AG's John Maguire goes to the FBI with the information that the Russians want the source code to his product. It seems to me that this presents the FBI with a golden opportunity: Give them the source code — but first, hire a patriotic, crack programmer to make a few subtle, well-hidden changes that will cause the program to give incorrect results, or to fail at some critical time. At the minimum, this might cause some heads to roll at KGB headquarters.

If I were the FBI, I would certainly want to explore this opportunity to commit some sabotage and be able to deny it at the same time.

And years afterward, in a neat, high-tech, now-it-can-be-told-type piece — the kind at which the bureau is so excellent — the FBI could do a little boasting and restore its faded image.

These questions are fairly obvious ones that should occur to anyone conversant with even elementary aspects of software. Perhaps someone will explore them in the future. Until that time, I suspect the story will be incomplete.

Karter is a Boston-based freelance writer specializing in data processing and behavioral issues.

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VIEWPOINT



LETTERS

User finds Big Blue bug

On Sept. 10, IBM Entry Systems Division was notified through formal channels that a significant error existed in the IBM Personal Computer Executive General Ledger 1.1 software package. This software package is marketed directly, and supposedly supported, by IBM.

IBM Customer Service Support in Boca Raton, Fla., investigated the error that we had reported and found conclusively that the error did exist and caused the erroneous results as reported. On Sept. 25th, IBM Custom-

er Service rendered the decision "that even though the error exists, and has no doubt existed over the three-year period that this product has been on the market, we do not intend to correct or do anything about it at this time. You are the first to report this problem, so it must not be causing much of a problem."

The problem is the date parameter within the system, and it is in two forms.

■ If you are using the IBM Pschtree General Ledger 1.1 software on an evening-shift basis, and it is 11:00 p.m. and you continue to use the system beyond midnight, the date reflected by the system and encoded on all reports and directories will still be the prior day. The date does not change, even when the internal interval timing has passed 24 hours.

■ The more critical problem is

that when you exit the IBM Pschtree General Ledger 1.1 software via normal operating procedures, the date that was loaded into the computer's operating system is obliterated, and the date reflected at the operating system prompt is the base date of the operating system. For example, under DOS 2.10, the date in the system when you exit general ledger to DOS will be 1-01-1980, not the current date that you loaded into the Personal Computer at start-up or boot time or while using the general ledger system.

Unless the user remembers that the date is flushed and reloads it, or unless the user creates a special batch stream to prompt the reloading of the date, any and all file activity from this point forward will contain the incorrect date of 1-01-1980. The user's disk directories will be in error

for all files from that point forward. This problem will occur on the Personal Computer, Personal Computer XT and the Personal Computer AT.

Raymond G. Florence Jr.
York, Pa.

LETTER

from page 78

over time) — particularly in maintaining unfamiliar applications. New application development productivity should improve by at least 10%.

■ Full-feature mainframe DBMS are as complex and sophisticated as equivalent operating systems. "Out feeling" has no more place in DBMS selection decision than it has in navigating a ship. Its use will likely put you in the wrong port — if you're lucky.

■ The more multirecord-type selection criteria a retrieval involves, the more efficient a fully inverted-index DBMS becomes, as all selection is done via compact indexes and not by lengthy data searching.

■ There exist today a few DBMS products that serve high-volume traditional applications, yet have superb ad hoc query/report/update/analysis capabilities. Installing multiple DBMS is no more desirable than putting a roller skate on one foot and a ski on the other.

DBMS selection is one of the most important decisions a modern organization will make. It can be fairly equated in impact to the selection of computer hardware itself. No organization can afford to "repent at leisure."

Henry A. Meyer
Norwalk, Conn.

PERFORM

from page 79

sometimes incorrect assessments are made, but if an environment of openness and candor can be developed, a reasonable assessment of how these two will work together in the future can be made.

The same thing should apply to the prospective employee and those with whom he will work. The prospective employee should be given some time to meet with several of these people to determine the potential working relationship. If, in talking with these people, the candidate senses a strong interpersonal relationship, the status quo, while he wants to deal in leading-edge issues, incompatibility is likely. Some contention is desirable within an information processing installation; however, bringing in someone who has views and a philosophy radically different from the rest of the group may lead to difficulty, unless the idea is to attempt to change.

Using increased care in selecting either a new position or a new employee is by no means a panacea. However, more care on the part of both parties can be beneficial. All concerned benefit from the ability to select employees or jobs where satisfaction, growth and a feeling of belonging are likely to occur.

Candor and openness on the part of all participants can help reduce turnover and increase job satisfaction.

When an employee with the skills, interest and ability does not do well, both the employee and the organization lose. More care in the hiring process can help avoid much mutual loss.

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IN DEPTH



Experiments In Artificial Intelligence

By Roger C. Schank
with Peter G. Childers

PHOTO BY PHIL KIDZING

It is clear what we must do next. We must develop systems with flexible, changeable knowledge structures that can learn while doing.

My colleagues and I at the Yale Artificial Intelligence Laboratory write programs in order to crystallize our theories. Ordinarily, our theories encompass such a complex range of processes that we cannot tell if they will do what we thought they would without actually writing the program and finding out. The early versions of programs rarely do fulfill our expectations completely, not unlike a first set of plans by an architect. The finished product, after having undergone numerous revisions, including perhaps a

complete recasting of the problem, may bear little relation to the original idea.

Every program we have written at the Yale laboratory has been an attempt to get a handle on a particular problem during our progress in solving some other problem. We may stop briefly and jump for joy at what a completed program does, but soon enough we are

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IN DEPTH/EXPERIMENTS IN AI

thinking about fixing its problems and moving along to the next program.

The real excitement in AI comes when we realize what we have left out of our previous attempt, which then tells us what to try next. Why we wrote these programs is more important than any of the programs themselves. With this in mind, let me offer a look at some of the programs we have produced over the last decade.

Work on natural language

processing began in the 1960s, but those initial attempts bear almost no resemblance to our approach today. These researchers, whether they happened to be in computer science or linguistics, started out by attempting to find the formal rules that might underlie language itself. This approach may not seem wrong in principle, but the question, *What is language?* is not quite the same as the question, *How do humans under-*

stand one another?

Early research concentrated on the outer form of language rather than on the content of communication and focused on getting a computer to break down a sentence into its parts of speech rather than into its elements of meaning.

These early researchers first attempted to build a parser. They wanted the computer to parse or convert sentences into grammatical structures according to stan-

dard grade-school rules.

These programs told the computer how to find the noun phrases, verb phrases, prepositional phrases and so on in a sentence by using the rules of how sentences are constructed. These investigators hadn't really given any thought to what would come after that. They never succeeded in writing down all the grammar rules and found themselves with a lot of unanswered questions about how to get the computer to

use language effectively. On the surface, at least, language is composed of vocabulary, grammar, syntax and semantics (whatever that is). But this kind of definition doesn't tell us much about what language has to do with understanding. Language is, above all, a medium for communication between people. It cannot be correctly analyzed without considering what kinds of ideas people want to express. Language must be treated as a vehicle rather than an entity in and of itself.

The statement *I want ice cream* isn't effectively analyzed if all we do is break it up into its subject and predicate. If a child came out with this sentence, we wouldn't reply to him, *All right, subject, I'll bring you some direct object*. But this is what programs that rely primarily upon syntactic rules, as well as some of the commercial systems now available, actually do. They match words in certain syntactic slots (the head noun, for instance) to field names in data bases. This allows them to find the information about "employees" under "employees" in the data base. But since these programs have no idea what "employees" means, heaven help them if the user of the system should mistakenly refer to them as "wage earners" or, worse yet, ask about the "money people make" instead of using the correct field name, "salary."

Playing doctor

Other early programs searched for key words or phrases in sentences without regard for the role of those words in the sentence or their meaning. This yielded programs that at most demonstrated people's gullibility. The most frequently cited examples of this approach are programs that simulated some of the questions and answers that a Rogerian psychiatrist might offer.

It isn't difficult to see how one could create a very simple program that appears to mimic a psychiatrist. In keyword systems, the computer can print messages that previously were composed by people when the program tells it to do so. A machine that prints "HELLO" when you type "Hello" might seem to be communicating, even though such behavior proves nothing about understanding.

This method of printing certain messages in response to certain inputs works well enough if your goal is to achieve not understanding, but simply the appearance of understanding. One rule you might give such a program would be that whenever the program sees the words *mother, father or parents* in the user's input, the program should print, *Tell me about*

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IN DEPTH/EXPERIMENTS IN AI

your relationship with your _____, tacking on whichever word had appeared in the user's input. This will work well enough when the input is, *My mother made me come here. But the user might type in, My ring is made of mother's pearl, or Do you read Mother Jones magazine?* The computer would use the same rule in each case and reply, *Tell me about your relationship with your mother.*

This ridiculously simple rule may indeed convince the user that he is talking to a psychiatrist who wants to bring the discussion around to the user's parental relationship. It also may convince the user that he is talking to an idiot. (When I showed one of the more sophisticated of these programs to a psychiatrist, he concluded that a computer program that was supposed to model persons instead had brain damage, a diagnosis that may have been more accurate than he realized.)

When this program failed to see any of the "parents" words in the user's first few statements, it would print, *You haven't talked about your family very much.* This gives the user the impression that the computer thinks he is avoiding the subject; however, the computer isn't thinking anything. Instead, it has been programmed to count the number of statements until it has to print that message. Another very simple, yet highly deceptive, print rule would be to tell the computer to print what the patient has said, changing only the personal pronouns and perhaps a few other words. This can have the effect of encouraging the user to think about what he has said and to elaborate on it. A conversation like the following might take place:

COMPUTER: You haven't talked about your family very much.

USER: Yes, well, I didn't get along with my family very well.

COMPUTER: You didn't get along with your family. USER: Well no, not for most of my childhood.

COMPUTER: Not for most of your childhood.

USER: That's right. My parents were always criticizing me.

COMPUTER: Your parents were always criticizing you.

USER: Yes. They never thought I was a good person.

COMPUTER: What does your father do?

USER: He's a professor.

COMPUTER: How do you feel about professors?

The computer can't miss with the last question. The computer has been given a simple rule telling it to let the user make two or three statements after the family question, replying to them only by repeating them, and then ask, *What does your father do?* Of course, as hap-

pened in one instance when these types of programs were being taken rather seriously, if a user responds, *It's doubtful, the computer's response, How do you feel about dead?* does not fairly irritate. Such a program obviously doesn't exhibit much true understanding.

The point here is that the program anticipates certain key words and responds to them with certain canned responses. A computer programmed to convert the

statement, *I hate you to Why do you hate me?* doesn't understand anything, doesn't have any expectations or knowledge structures for what it says and, most important, doesn't tell us anything about the nature of human understanding. It does serve to test a hypothesis about I assume no one ever had, namely, that people respond to sentences by parroting back what they heard. Some people may well do this — they may even get paid to

In the late '60s, researchers began to look at the underlying problems of language — the nature and representation of meaning — in the hope of developing a completely new approach to natural language processing.



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IN DEPTH/EXPERIMENTS IN AI

do it — but as a theory of understanding it falls apart rather quickly.

If the user said, instead, *The very sight of you makes me want to throw up*, the computer wouldn't understand. A tricky programmer might have told it to print, *Are you feeling ill?* whenever it saw the words *throw up*. This program would be no more than a set of tricks. It might initially look convincing, but it wouldn't take long to get exasperated with it.

In the late '60s, researchers — myself included — began to consider problems of meaning as central to the development of natural language processing by humans or computers. We began to look at the underlying problems of language — the nature and representation of meaning — in the hope of developing a completely new approach to natural language

processing. The best way to appreciate how far we have come is to look at various programs and see how we progressed from one to the other.

The programs I have chosen to discuss were all done under my direction, since it seems most sensible to discuss the work I know best.

The programs

My students and I decided that it would be better to try to extract meanings from sentences than to extract grammatical units from sentences. Where the old objective of a parser was to make a grammatical analysis of a sentence, we decided that the new objective should be a meaning analysis of the sentence. In other words, rather than concentrate on how a sentence was constructed, we worried about how to represent what was happening in the event

that the sentence describes. Our aim was to write programs that would concentrate on crucial differences in meaning, not on issues of grammatical structure.

This view redefined the parsing problem. We used whatever grammatical rules were necessary in our quest to extract meanings from sentences but, to our surprise, little grammar proved to be relevant for translating sentences into a system of conceptual representations. While I was at Stanford in the late '60s and early '70s, we began work on a program that could parse English sentences into conceptual representations. At the same time, we began to build a generator, that is, a program that could take conceptual representations and make English out of them. We realized that if you could extract the meaning from a sentence

by representing it conceptually, you had better be able to retrieve the English or you would have lost information in the process.

If early work on parsing was overly concerned with syntax, the work on generation of sentences by computer was even worse. Early efforts on the generation of English sentences had concentrated on the problem of generating random sentences. Because the computer had nothing to say, generating sentences only could serve as an exercise in the grammatical construction of a sentence. But the moment we had achieved even the crudest levels of language understanding — the most primitive form of meaning representation — we re-

Our aim was to write programs that would concentrate on crucial differences in meaning, not on issues of grammatical structure.

alized that we needed a generator right away. Like the parser, the generator had to be constructed from new principles.

From the very beginning, the theories of language generation that evolved in AI looked considerably different from those developed in fields that were concerned with language per se rather than with understanding. An AI generator has to express what the computer wants to say. However, getting a computer to have something to say poses a problem. In this first stage, the computer just "wanted" to express what it had just parsed, so we could start with a meaning and then find a form to express it, rather than the other way around.

In linguistics, for example, rules for the generation of sentences started with the idea that because a sentence consisted of a noun phrase and a verb phrase, the generation of a sentence required the selection of a noun phrase and, hence, a noun. Thus, generating a sentence meant just finding its form and then finding a meaning to fit that form. Clearly, this method would not work for either computers or people.

The basic intent of our work was to provide unique representations for ideas that could be expressed in many ways. Because of this, our programs could understand an event to be the same one as one seen previously, even if the previous expression of that event had been quite

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IN DEPTH/EXPERIMENTS IN AI

different. The conceptual representations that we devised were intended to facilitate the automatic paraphrasing of a sentence that the program read—and even the translation of that sentence into other languages.

We connected the generator to the parser to get a paraphrasing program. We found some graduate students who knew German and Chinese, so they went to work on building generators for those languages, which gave us the ability to develop translations of a sentence. Translation followed rather naturally from what we were doing. Once the parser represented the meaning, encoding that meaning into a language again was just as complex a task whether the language was English or Chinese. As long as the representation had no language-specific parts, that is, if it were truly conceptual, translation and paraphrase were essentially the same task.

By 1973 we could parse, generalize, paraphrase and even translate sentences. We did not yet have an un-

derstanding system, but we had a new view on the problem and a cascade of solutions and new ideas.

Margie. Where did we go from there? Clearly, paraphrasing is not all we can do when we read a sentence. We can extrapolate from the smallest amount of information. The full meaning of a sentence is more than the sum of its parts. People speak in a kind of shorthand, expecting that their listeners will fill in assumptions as needed. We needed to program the computer to understand not only by extracting meanings from sentences, but also by making inferences. We began to develop a theory of inference and built an inference.

Then someone suggested that we should put the parser, inference and generator together in one big program, so we did and called it Margie.

Margie stood for Memory, Analysis, Response Generation in English. (Margie also is the name of my mother.) This was the first time anyone had created a system that could paraphrase meanings, translate and draw inferences from sentences.

Margie was our first attempt to parse English into conceptual representations. It consisted of three separate programs: a parser, which we called a conceptual analyzer to distinguish it from other syntactic parsers (the parser was written by Christopher Riesbeck as part of his Ph.D. work at Stanford); an inference (written by Chuck Rieser as part of his Ph.D. work at Stanford); and a generator (written by Neil Goldman as part of his Ph.D. work at Stanford).

The output in Figure 1 shows Margie in two different modes of opera-

tion. In the inference mode, all three programs were linked together. The parser sent its output to the inference, which then made inferences and sent them to the generator to be expressed in English. In the Paraphrase mode, the parser decomposed the sentences into conceptual representations, and then the generator expressed those representations in a number of different ways that showed the power of the representations.

No sooner did we gain some success than we began to see trouble ahead or new problems to work on. Margie showed us that inferring required careful control. We had 16 basic rules of inference, each of which was used every time the computer read a sentence. These rules were fairly simple, but the goal was merely to test some ideas about

INFERENCE MODE

INPUT: John told Mary that Bill wants a book.

OUTPUT1: A book about what?

OUTPUT2: Mary knows that Bill wants a book.

OUTPUT3: Bill wants to come to have a book.

OUTPUT4: Bill wants someone to come to have a book.

OUTPUT5: Bill wants to read a book.

INPUT: John gave Mary a beating with a stick.

OUTPUT1: A stick beat Mary.

OUTPUT2: Mary became hurt.

OUTPUT3: John wanted Mary to become hurt.

OUTPUT4: Why was John angry?

INPUT: John gave Mary an aspirin.

OUTPUT1: John believes that Mary wants an aspirin.

OUTPUT2: Mary is sick.

OUTPUT3: Mary wants to feel better.

OUTPUT4: Mary will ingest the aspirin.

INPUT: John is going to go to the store.

OUTPUT1: John wants to be at the store.

OUTPUT2: What does John want to buy?

OUTPUT3: John will trade money to the store for something.

PARAPHRASE MODE

INPUT: John advised Mary to drink the wine.

OUTPUT: John told Mary that drinking the wine would benefit her.

INPUT: John killed Mary by choking Mary.

OUTPUT1: John strangled Mary.

OUTPUT2: John choked Mary and she died because she could not breathe.

OUTPUT3: Mary died because she was unable to inhale some air and she was unable to inhale some air because John grabbed her neck.

INPUT: Reading the book reminded Rita to loan the book to Bill.

OUTPUT: Rita remembered to give the book to Bill and she expects him to return it to her because someone read the book.

INPUT: John prevented Bill from giving a banana to Mary by selling a banana to Rita.

OUTPUT1: Bill was unable to give a banana to Mary because Rita traded John some money for a banana.

OUTPUT2: Mary could not get a banana from Bill because Rita bought a banana from John.

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Figure 1. The Margie program, 1973

IN DEPTH/EXPERIMENTS IN AI

inferencing. Since people also make inferences from inferences, the program subjected the new conceptual representations that it had derived from the inference process to the 16 rules of inference and generated inferences from each of them.

A combinatorial explosion of inferences quickly resulted. Some of the new inferences were valid and sensible, but many were ridiculous and irrelevant. Our new problem involved getting the computer to know the difference.

Two important theoretical issues emerged from the work on Margie. First, we had to find a way to focus the inferencing process in such a way as to pursue only reasonable paths at reasonable levels of detail. The second problem, related to the inference explosion problem, had to do with the initial restrictions placed

We developed a system of causal chaining, principles that allowed the computer to tie the meaning of one sentence to that of the next sentence by attempting to infer the connections between them.

on Margie. Margie handled individual sentences that were unrelated to one another.

We began to concern ourselves with the differences between understanding sentences by themselves, out of context, and understanding cohesive paragraphs which themselves were part of a larger context. We could parse sentences individually, but we had no idea what it would mean to relate them to one another.

If we wanted a computer to process and understand text, then a program would have to be able to connect one sentence to the next.

Fortunately, these two problems were related. Inference explosions aren't as likely to occur in context, since we have a sense of what a paragraph is really about. Understanding in context, therefore, poses a fundamentally different program from the one presented to Margie.

Serendipitously, the same basic parsing and generation techniques did apply.

Sam, I sat in a villa by a lake for a year working on these two problems. (An AI researcher doesn't need a computer most of the time. All he needs to begin with are a pencil and paper.) Both problems, inference explosion and connected text, were intimately related and could be solved with similar mechanisms. We developed a system of causal chaining, principles that allowed the computer to tie the meaning of one sentence to that of the next sentence by attempting to infer the connections between them. For example, one of the results of the first sentence might have to do with enabling an action in other sentences in the paragraph.

At Yale in 1974, we began to try to program rules for causal chaining to limit inferences during the reading of stories. But some connections between sentences couldn't be figured out as if they were "logical." It isn't "logical" to think that looking at a menu naturally precedes eating in the context of a restaurant. People don't attempt to figure out the connection between those two events each time as if it were the first time they had encountered such a situation.

Scripts were invented by Robert Abelson (a psychology professor at Yale) and me to solve this problem. They enabled the computer to process stories by providing rules for

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Input:

Friday evening a car reversed off Route 66. The vehicle struck a tree. The passenger, a New Jersey man, was killed. David Hall, 27, was pronounced dead at scene by Dr. Dana Blanchard, medical examiner. Frank Miller, 32, of 563 Foxon Rd., the driver, was taken to Milford Hospital by Plainfield Ambulance. He was treated and released. No charges were made. Plainfield Police Officer investigated the accident.

English summary:

AN AUTOMOBILE HIT A TREE NEAR HIGHWAY 66 FOUR DAYS AGO. DAVID HALL, AGE 27, RESIDENCE IN NEW JERSEY, THE PASSENGER, DIED. FRANK MILLER, AGE 32, RESIDENCE AT 563 FOXON ROAD IN NEW HAVEN, CONNECTICUT, THE DRIVER, WAS SLIGHTLY INJURED. THE POLICE DEPARTMENT DID NOT FILE CHARGES.

Spanish summary:

UN AUTO CHOCO CONTRA UN ARBOL CERCA DE LA CARRETERA 66 EL VIERNES AL AÑOCHECER. DAVID HALL, DE 27 AÑOS, QUE VIVIA EN NEW JERSEY, EL PASAJERO, SE MURO. FRANK MILLER, DE 32 AÑOS, QUE VIVIA EN 563 CALLE FOXON EN NEW HAVEN, CONNECTICUT, EL CHOFER, QUEDO EN FOCO HERIDO. EL DEPARTAMENTO DE POLICIA NO ACUSO A NADIE.

Question-answering output:

- Q1: Was anyone killed?
A1: YES, DAVID HALL DIED.
- Q2: Was anyone hurt?
A2: YES, FRANK MILLER WAS SLIGHTLY INJURED.
- Q3: Why was Miller hurt?
A3: BECAUSE THE AUTOMOBILE HIT THE TREE.
- Q4: Did Miller go to the hospital?
A4: YES, HE WAS IN THE MILFORD HOSPITAL.
- Q5: How did Miller get to the hospital?
A5: THE PLAINFIELD AMBULANCE COMPANY TOOK HIM TO THE MILFORD HOSPITAL.

Figure 2. The Sam program, 1975

IN DEPTH/EXPERIMENTS IN AI

understanding the connectivity in a stereotypical situation. We wrote Sam (Script Applier Mechanism), a program that could read stories that were scriptlike or script based (see Figure 2).

Sam could read a variety of stories, including actual newspaper stories on specific subjects. Since we already had the translation ability that the conceptual parsers and generators from Margie provided, we could translate the stories that we read into other languages. We concentrated on car accident stories because they were both scriptlike and plentiful.

We built programs to translate car accident stories from the *New Haven Register* into Russian and Spanish. A few people who knew both languages would look at the Russian and Spanish versions of a story and say, *Hey, these aren't exact translations of each other. We told them no, they weren't exact translations of each other. The student who had written the Russian generator wrote it differently from the one that the Spanish-speaking student had written. Each system was independent, and the meaning representations used reflected not only linguistic but also cultural differences. (The Russian-speaking student reported, for example, that Russian newspapers never report car accidents, so he had a fair amount of difficulty just deciding what vocabulary to use.)*

The translation modules converted the conceptual representations that Sam produced into an appropriate expression in the target language.

Sam had four basic modules. It used the parser and generators from

Margie, although they were in a somewhat modified form. The center of the program was the Script Applier, which also contained a memory and inference part. The Script Applier was written by Richard Collingford as part of his Ph.D. thesis at Yale. He also put all the other pieces together to make it all work.

A question-answering module attempted to figure out the intention of a question and give the memory a clue as to where the answer might be found in the conceptual representation of the story that had been produced by the Script Applier. The question-answering was written by Wendy Lehnert as part of her Ph.D. thesis at Yale. The Russian generator was written by Anatole Gershman and the Spanish one by Jaime Carbonell.

Once again, what Sam could not do made it obvious what to do next. We had been dealing with highly restricted scripts, but real stories contain interesting complications and unusual consequences. Stories have characters who find novel ways to get what they want, characters who act without resorting to a script. We had to start developing structures that allowed the computer to understand a character's plans and goals.

In order to understand a story about a liquor store robbery, we could have created a liquor store robbery script. But most people don't have such a script, having neither observed nor participated in a liquor store robbery. We could have given the computer a large range of understanding by giving it an endless number of scripts, but when it found itself without a script, it would have



INPUT TEXT:

John wanted money.
He got a gun and walked into a liquor store.
He told the owner he wanted some money.
The owner gave John the money and John left.

INPUT: Why did John get a gun?
OUTPUT: Because John wanted to rob the liquor store.

INPUT: Why did John threaten the shopkeeper?
OUTPUT: Because John needed to get some money.

INPUT: Why did the shopkeeper give John the money?
OUTPUT: Because the shopkeeper didn't want to get hurt.

INPUT: Why did John leave?
OUTPUT: Because John didn't want to get caught.

OUTPUT:

STORY FROM JOHN'S POINT OF VIEW:
I needed to get some dough. So I got myself this gun, and I walked down to the liquor store. I told the shopkeeper that if he didn't let me have the money then I would shoot him. So he handed it over. Then I left.

OUTPUT:

STORY FROM THE OWNER'S POINT OF VIEW:
I was minding the store when a man entered. He threatened me with a gun and demanded all the cash on receipt. Well, I didn't want to get hurt, so I gave him the money. Then he escaped.

INPUT TEXT:

John wanted to win the stockcar race. Bill also wanted to win the stockcar race. Before the race John cut Bill's ignition wire.

INPUT: Why did John break an ignition wire?
OUTPUT: Because he was trying to prevent Bill from racing.

INPUT:

JOHN WANTED BILL'S BICYCLE. HE WENT OVER TO BILL AND ASKED HIM IF HE WOULD GIVE IT TO HIM. BILL REFUSED. JOHN TOLD BILL HE WOULD GIVE HIM FIVE DOLLARS FOR IT. BUT BILL WOULD NOT AGREE. THEN JOHN TOLD BILL HE WOULD BREAK HIS ARM IF HE DIDN'T LET HIM HAVE IT. BILL GAVE HIM THE BICYCLE.

QUESTION: Q1

Why did John walk over to Bill?
Because he wanted to get his bicycle.

QUESTION: Q2

Why did Bill give his bicycle to John?
Because he didn't want to get hurt.

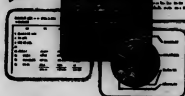
QUESTION: Q3

What were the consequences of John's walking over to Bill?
This resulted him to ask him to give him Bill's bicycle.

QUESTION: Q4

What were the consequences of John's asking Bill to give him Bill's bicycle?
Bill said him that Bill wouldn't give him Bill's bicycle.

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Figure 2. The Pam program, 1977

IN DEPTH/EXPERIMENTS IN AI

The US Congress is expected to approve the Panama Canal Treaty.

CONSERVATIVE MODE:

INTERPRETATION COMPLETED, READY TO ACCEPT QUESTIONS.

Q1: Should the US approve the treaty?
A1: NO, THE TREATY IS BAD FOR THE UNITED STATES.

Q2: Why is the treaty bad for the US?
A2: THE UNITED STATES WOULD LOSE THE CANAL TO PANAMA AND THE UNITED STATES WILL BE WEAKER.

Q3: What might happen if the United States loses the Canal?
A3: RUSSIA WILL TRY TO CONTROL THE CANAL.

Q4: Why would Russia try to take over the Canal?
A4: RUSSIA WANTS TO EXPAND ITS MILITARY CONTROL. THE PANAMA CANAL HAS HIGH MILITARY VALUE.

Q5: How might this happen?
A5: THE UNITED STATES MAY NOT BE ABLE TO STOP ANYONE TAKING OVER THE PANAMA CANAL. TORIJOS WAS A COMMUNIST. TORIJOS WILL LET RUSSIA CONTROL PANAMA.

Q6: Why should the US worry about Russia taking over the Canal?
A6: BECAUSE RUSSIA WANTS TO CONTROL THE WORLD.

Q7: What should the US do to stop Russia from taking over the Canal?
A7: CONGRESS SHOULD VOTE AGAINST THE PANAMA CANAL TREATY.

LIBERAL MODE:

INTERPRETATION COMPLETED, READY TO ACCEPT QUESTIONS.

Q1: Should the US approve the treaty?
A1: YES, THE PANAMA CANAL TREATY IS GOOD FOR THE UNITED STATES.

Q2: Why is the treaty good?
A2: THE PANAMA CANAL TREATY IMPROVES RELATIONS WITH LATIN AMERICAN COUNTRIES.

Q3: What happens if the US keeps the Canal?
A3: RUSSIA WILL TRY TO TAKE OVER THE CANAL.

A3: THIS WILL CAUSE DISCONTENT AND CONFLICT IN PANAMA AND LATIN AMERICA.

Q4: Why would this lead to conflict?
A4: THE CANAL ZONE IS A UNITED STATES COLONY. LATIN AMERICA DOES NOT LIKE COLONIALISM. THE UNITED STATES WOULD MAINTAIN COLONIALISM.

Q5: What if Russia tries to take over the canal?
A5: RUSSIA DOES NOT WANT CONFLICT WITH THE US. RUSSIA WILL STAY OUT OF THE CANAL. IF THE UNITED STATES DEFENDS IT, THE UNITED STATES IS DEFENDING THE CANAL. IS PART OF THE TREATY.

Russia is sending troops on the Canal border.

CONSERVATIVE MODE:

INTERPRETATION COMPLETED, READY TO ACCEPT QUESTIONS.

Q1: Why did Russia do this?
A1: BECAUSE RUSSIA THOUGHT THAT IT COULD TAKE POLITICAL CONTROL OF CZECHOSLOVAKIA BY SENDING TROOPS.

Q2: What will Russia do next?
A2: RUSSIA MAY TELL ITS TROOPS TO START THE INVASION.

Q3: What else can Russia do?
A3: RUSSIA MAY WANT FOR CZECHOSLOVAKIA TO GIVE IN TO RUSSIAN DEMANDS.

Q4: What happens if Czechoslovakia does not give in?
A4: RUSSIA MAY DECIDE TO START THE INVASION.

Q5: What should the United States do?
A5: THE UNITED STATES SHOULD INTERVENE MILITARILY.

Q6: What else can the United States do?
A6: THE UNITED STATES CAN DO NOTHING OR IT CAN INTERVENE DIPLOMATICALLY BY CONFERRING WITH RUSSIA ABOUT CZECHOSLOVAKIA. THESE ALTERNATIVES ARE BAD FOR THE UNITED STATES.

INPUT:

WASHINGTON, MARCH 15 — THE STATE DEPARTMENT ANNOUNCED TODAY THE SUSPENSION OF DIPLOMATIC RELATIONS WITH EQUATORIAL GUINEA. THE ANNOUNCEMENT CAME FIVE DAYS AFTER THE DEPARTMENT RECEIVED A MESSAGE FROM THE FOREIGN MINISTER OF THE WEST AFRICAN COUNTRY SAYING THAT HIS GOVERNMENT HAD DECLARED TWO UNITED STATES DIPLOMATS PERSONA NON GRATA.

THE TWO ARE AMBASSADOR HERBERT J. SPIRO AND CONSUL WILLIAM C. WITTEBERGER JR., BOTH STATIONED IN NEIGHBORING CAMEROON BUT ALSO ACCREDITED TO EQUATORIAL GUINEA.

ROBERT L. FUNKEITH, STATE DEPARTMENT SPOKESMAN, SAID MR. SPIRO AND MR. WITTEBERGER SPENT FIVE DAYS IN EQUATORIAL GUINEA EARLIER THIS MONTH AND WERE GIVEN "A WARM RECEPTION."

BUT AT THE CONCLUSION OF THEIR VISIT, MR. FUNKEITH SAID, EQUATORIAL GUINEA'S ACTING CHIEF OF PROTOCOL HANDED THEM A FIVE-PAGE LETTER THAT CHARGED "UNWARRANTED AND INSULTING BLAMES" ON BOTH DIPLOMATS.

SELECTED SKETCHY SCRIPT BREAK-RELATIONS

CPU TIME FOR UNDERSTANDING = 2515 MILLISECONDS

ENGLISH SUMMARY:

THE U.S. STATE DEPARTMENT AND GUINEA HAVE BROKEN DIPLOMATIC RELATIONS.

FRENCH SUMMARY:

LE DEPARTEMENT D'ETAT DES ETATS-UNIS ET LA GUINEE ONT COUPE LEURS RELATIONS DIPLOMATIQUES.

CHINESE SUMMARY:

MEIGUO GUOWUYUANYUAN GENJUNYIYU GUANQUYUANYUAN XUYIYU GUANSHI.

SPANISH SUMMARY:

EL DEPARTAMENTO DE RELACIONES EXTERIORES DE LOS EE.UU. Y GUINEA CORTARON SUS RELACIONES DIPLOMATICAS.

INPUT:

MOUNT VERNON, AL (AP) — A SMALL

EARTHQUAKE SHOOK SEVERAL SOUTHERN ALABAMA COUNTIES MONDAY NIGHT, THE NATIONAL EARTHQUAKE INFORMATION SERVICE IN GOLDEN, COLO., REPORTED.

SPOKESMAN DON FOLEY SAID THE QUAKE MEASURED 3.3 ON THE RICHTER SCALE, "PROBABLY NOT ENOUGH TO DO ANY DAMAGE OR CAUSE ANY INJURIES." THE QUAKE OCCURRED ABOUT 7:40 P.M. EST AND WAS CENTERED ABOUT 30 MILES EAST OF MOUNT VERNON, FOLEY SAID. IT WAS FELT IN RICHMOND, CLAY, JASPER, EFFERSON AND MARION COUNTIES.

SMALL EARTHQUAKES ARE COMMON IN THE AREA, FOLEY SAID.

SELECTED SKETCHY SCRIPT EARTHQUAKE

CPU TIME FOR UNDERSTANDING = 3040 MILLISECONDS

ENGLISH SUMMARY:

THERE WAS AN EARTHQUAKE IN ALABAMA WITH A 3.300 RICHTER SCALE READING.

INPUT:

THE CHILEAN GOVERNMENT HAS SEIZED OPERATIONAL AND FINANCIAL CONTROL OF THE U.S. INTEREST IN THE EL YENES-SENTE IRON-ORE COMPANY, ONE OF THE THREE BIG COPPER ENTERPRISES HERE, WHEN THE IRON-ORE COPPER COMPANY, THE OWNERS, SOLD A 51 PERCENT INTEREST IN THE COMPANY TO THE CHILEAN STATE COPPER CORPORATION IN 1982. IT RETAINED A CONTRACT TO MANAGE THE SENSE, ROBERT HALPERMAN, EXECUTIVE VICE PRESIDENT OF EL YENES-SENTE, SAID THE CONTRACT HAD BEEN "FORWARDED" BY THE LATEST GOVERNMENT ACTION. AFTER A MEETING WITH COMPANY OFFICIALS AT THE MINE SITE NEAR HERE, HOWEVER, HE SAID THAT HE HAD INSTRUCTED THEM TO COOPERATE WITH EL YENES-SENTE AGREEMENTS THAT THE CHILEAN GOVERNMENT HAD APPOINTED TO CONTROL ALL ASPECTS OF THE COMPANY'S OPERATIONS.

SELECTED SKETCHY SCRIPT INTERNATIONALIZE

CPU TIME FOR UNDERSTANDING = 3457 MILLISECONDS

ENGLISH SUMMARY:

CHILE HAS NATIONALIZED AN AMERICAN MINE.

Figure 4. The Politics program, 1978

Figure 5. The Farm program, 1978

IC

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been stymied. We had to give the computer methods for dealing with the world when it did not have an applicable script.

Pam. As a way of exercising our ability to program plan and goal structures, we were building TaleSpin at the same time we were building Sam. This was the first program to make up its own stories using just some principles of storytelling and rules for planning in an imaginary world.

We then used these ideas of how people plan to achieve goals to help in getting computers to understand stories by building Pam (Plan Apprehension), a program that attempted to understand the world in terms of the rules we have for resolving goal conflicts, achieving temporarily blocked goals and so on.

Pam was written by Robert Wilensky as part of his Ph.D. thesis at Yale. The generator used by Pam was different from our Marge generator. The generator for Pam was written by Richard Granger. Because Pam used goals to track its characters, it was possible to tell stories from the viewpoint of those characters. We also added some vocabulary typical of different types of people to make the output seem realistic.

The vocabulary trick was shrewd

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*Computerworld, August 20, 1984

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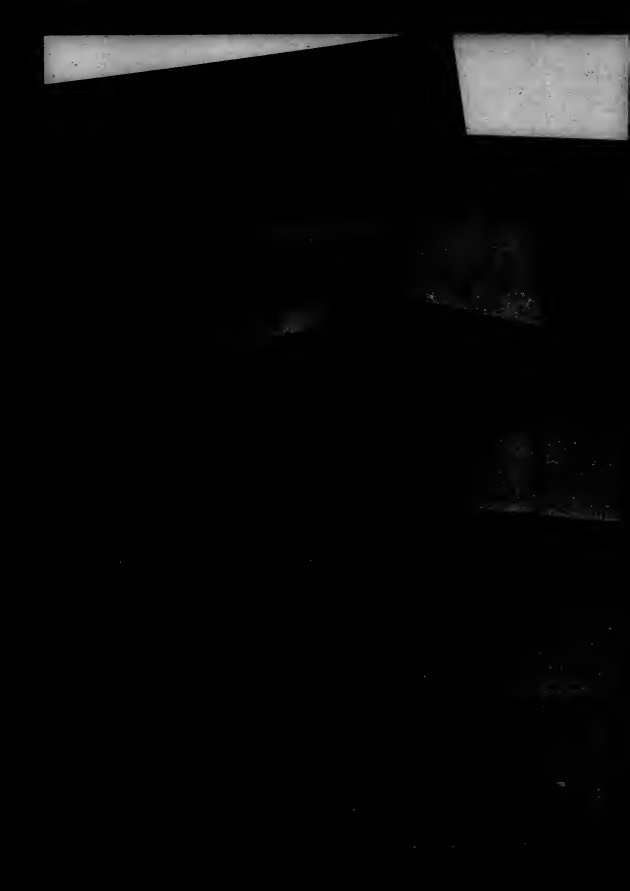
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IN DEPTH/EXPERIMENTS IN AI

*PARSE (S1-7)

(10 9 78) SPAIN

(STEPPING UP EFFORTS TO OBTAIN A BASQUE HOME RULE STATUTE THAT WILL BE PUT TO A REFERENDUM THIS MONTH BASQUE GUNMEN IN SAN SEBASTIAN SPRAYED A BAR FREQUENTED BY POLICEMEN WITH GUNFIRE WOUNDING 11 PERSONS)

(IN PAMPLONA ANOTHER BASQUE CITY TERRORISTS MURDERED A POLICE INSPECTOR "COMMAN" KILLING HIM AS HE DREW HIS OWN WEAPON IN SELF-DEFENSE)

>>> Beginning final memory incorporation ...

Feature analysis:	EVS (S1-7) DESTRUCTIVE-ATTACK	
RESULTS:	HEALTH	-10 HURT-PERSON
	AU	5
HEALTH:	NUMBER	MANY
VICTIM:	ROLE	AUTHORITY
	PLACE	BAR
TARGET:	NATIONALITY	BASQUE
ACTION:		\$SHOOT-ATTACK
METHODS:	AREA	WESTERN-EUROPE
LOCATION:	NATION	SPAIN

Increasing EV1 (S1-7) as variant of S-DESTRUCTIVE-ATTACK

>>> Memory incorporation complete

[S 15 80] SPAIN

(A BASQUE SEPARATIST GUERRILLA SHOT TO DEATH THREE YOUNG NATIONAL POLICEMEN AT POINT BLANK RANGE THURSDAY AS THEY DRANK THEIR MORNING COFFEE IN A BAR)

>>> Beginning final memory incorporation ...

Feature analysis:	EVS (S1-7) DESTRUCTIVE-ATTACK	
TARGET:	PLACE	BAR
VICTIM:	GENDER	MALE
	ROLE	AUTHORITY
ACTION:	NATIONALITY	BASQUE
	DEMAND-TYPE	SEPARATISM
METHODS:		\$SHOOT-ATTACK
LOCATION:	AREA	WESTERN-EUROPE
	NATION	SPAIN

Creating more specific S-DESTRUCTIVE-ATTACK (S1-1) : BASQUE-GEN from events EV1 (S1-7) EV5 (S1-6) with features:

VICTIM:	(1) GENDER	MALE
	(1) AUTHORITY	
ACTION:	(1) NATIONALITY	BASQUE
	(1) AU	\$SHOOT-ATTACK
METHODS:	(1) AREA	WESTERN-EUROPE
LOCATION:	(1) NATION	SPAIN
TARGET:	(1) PLACE	BAR

>>> Memory incorporation complete

"Terrorist attacks in Spain are often shootings of policemen in bars by Basques"

Figure 6. The IPP program, 1980

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but involved little theory.

Politics. Once we built a program that used plans to understand stories, we opened up a set of new problems. For example, once we create a plan, someone else can come up with a counterplan. When we read stories, we aren't just aware of plans, we can recognize counterplans and counter-counterplans. With this in mind, we wrote Politics (we never did think up an acronym for this one), a model of a U.S. senator's position on foreign policy questions, complete with separate belief systems that held the beliefs of a conservative and those of a liberal. Politics was intended to sound like a U.S. senator by reflecting some of the reasoning processes that a senator might use in answering questions that were asked of him (see Figure 4 on ID/10).

Politics was written by Jaime Carbonell as part of his Ph.D. thesis at Yale. It differed from our other programs in that it was an integrated system. Rather than have a separate parser as we had done before, Politics used its knowledge of the situation to help it understand sentences.

Politics demonstrated that one must interpret any new item of information using all the mental processes available. Beliefs, inferences, plans, goals, scripts, prior memories—all were relevant to the understanding of international events. In Politics, they all were there in one place.

Frump. Success in these programs led us to begin to attack our old problems in different ways. First, we tried to speed up what we had done already. Next, we tried to integrate fully all the processes we knew about into one grand story understanding system. Sam had been slow; it made inferences for every single aspect of a script-based story as it read through, and it took the computer a very long time to process each story. Although we believed that the processes Sam went through were part of language understanding, not all those processes were used all the time.

We decided to work on turning off some of Sam's processes at appropriate times. Another problem with Sam was that it was modular. It first put a sentence through a parser, then through the inferencer, script applicator and generator. But real human understanding is more likely to be integrated. We start parsing, making inferences and generally interpreting a sentence even before we have heard the end of it. We do not wait to see how a sentence will turn out before we begin to understand it.

We decided to integrate everything and speed everything up by not wasting time on spurious inferencing. We wrote Frump (Fast Reading, Understanding and Memory Program). We hooked this program up to the United Press International news wire, and the program zipped through it, summarizing the stories that it understood in several languages (see Figure 5 on ID/10).

Frump was written by Jerry De Jong as part of his Ph.D. thesis at Yale. Frump was a complex program, and Jerry had many assistants to help build various parts of the program. These included Kris Hammond, Jim Hendler and Bill Ferguson. Frump was our first attempt to build a product-directed program. We wanted to see how hard it would be to make the story-understanding

process fast. As a result, we sacrificed careful understanding for speed. Nevertheless, theoretical advances did come from Frump, the most notable being the fusing of the parsing and inference processes into one basic process.

Frump worked so well that people were calling up to ask us to create a program that could read and keep track of massive texts such as the Congressional Record and to build systems that could analyze foreign publications. We had to point out that Frump only contained a few scripts to read restricted kinds of new stories and that any kind of general understanding system would require thousands of scripts.

IPP. We next wrote a program called IPP (Integrated Partial Parser). IPP was essentially like Frump except that it had detailed

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IN DEPTH/EXPERIMENTS IN AI

PROCESSING PARAGRAPH 1:

Richard hadn't heard from his college roommate Paul for years. Richard had borrowed money from Paul which was never paid back. But now he had no idea where to find his old friend. When a letter finally arrived from San Francisco, Richard was shocked to find out how Paul was.

READY TO ACCEPT Q/A:

>What happened to Richard at home?<
RICHARD GOT A LETTER FROM PAUL.

>Who is Paul?<
RICHARD'S FRIEND.

>Did Richard want to see Paul?<
YES, RICHARD WANTED TO KNOW HOW PAUL WAS.

>Had Paul helped Richard?<
YES, PAUL LENT MONEY TO RICHARD.

>Why didn't Richard pay Paul back?<
RICHARD DID NOT KNOW WHERE PAUL WAS.

>How did Richard feel when the letter came?<
RICHARD FELT GLAD BECAUSE PAUL AND HE WERE FRIENDS.

PROCESSING PARAGRAPH 2:

Unfortunately, the news was not good. Paul's wife Sarah wanted a divorce. She also wanted the car, the house, the children, and money. Paul wanted a divorce, but he didn't want to see Sarah walk off with everything he had. His salary from the state school system was very small. Not knowing who to turn to, he was hoping for a favor from the only lawyer he knew. Paul gave his home phone number in case Richard felt he could help.

READY TO ACCEPT Q/A:

>What was the letter about?<
PAUL AND SARAH WERE GETTING A DIVORCE.

>Did Paul write Sarah?<
NO, IT WASN'T SARAH, IT WAS RICHARD WHO GOT THE LETTER.

>Why was Paul upset about the divorce?<
PAUL AND SARAH WERE FIGHTING OVER THE FAMILY POSSESSIONS.

>What did Paul do for a living?<
PAUL WAS A TEACHER.

>What did Sarah want?<
SARAH WANTED TO HAVE THE CAR AND THE HOUSE AND THE KIDS AND THE MONEY.

>Why did Paul write to Richard?<
PAUL WANTED RICHARD TO BE HIS LAWYER.

>go<

PROCESSING PARAGRAPH 3:

Richard eagerly picked up the phone and dialed. After a brief conversation, Paul agreed to have lunch with him the next day. He sounded extremely relieved and grateful.

READY TO ACCEPT Q/A:

>Why did Richard call Paul?<
RICHARD WANTED TO ARRANGE A MEETING WITH PAUL.

>Did Richard contact Paul?<

>How did Richard contact Paul?<
BY PHONE.

>How did Paul feel when Richard called?<
PAUL WAS HAPPY BECAUSE RICHARD AGREED TO BE PAUL'S LAWYER.

>go<

PROCESSING PARAGRAPH 4:

The next day, as Richard was driving into the restaurant, he barely noticed hitting an old man on the street. He felt extremely upset by the incident, and had time to think at the restaurant.

When Paul arrived Richard was fairly drunk. After the first course, Richard spilled a cup of coffee on Paul. Paul seemed very annoyed by this as Richard offered to give him home for a change of clothes.

READY TO ACCEPT Q/A:

>Why did Richard call out with Paul?<
RICHARD WANTED TO DISCUSS THE DIVORCE CASE WITH PAUL.

>What happened to Richard on the way to the restaurant?<
RICHARD ALMOST RAN OVER AN OLD MAN.

>Why did Richard get drunk?<
RICHARD WAS UPSET ABOUT ALMOST RUNNING OVER THE OLD MAN.

>What happened at the restaurant?<
RICHARD SPILLED COFFEE ON PAUL.

>How did Richard feel when the coffee spilled?<
RICHARD WAS DISAPPOINTED.

>Why did Richard spill the coffee?<
RICHARD WAS DRUNK.

>When did Richard almost hit the old man?<
WHILE RICHARD WAS DRIVING TO THE RESTAURANT.

>Where did Richard have lunch with Paul?<
AT A RESTAURANT.

PROCESSING PARAGRAPH 5:

When Paul walked into the bedroom and found Sarah with another man he really had a heart attack. When he realized what a blessing it was. With Richard there as a witness, Sarah's divorce case was short. Richard congratulated Paul and suggested that they celebrate at dinner. Paul was eager to comply.

READY TO ACCEPT Q/A:

>Why did Richard call Paul home?<
NO PAUL COULD CHANGE HIS CLOTHES.

>What happened to Paul at home?<
PAUL CALLED SARAH COMMITTING ADULTERY.

>How did Paul feel?<
PAUL WAS SURPRISED.

>Why did Sarah leave her divorce case?<
SARAH COMMITTED ADULTERY.

>Why did Richard congratulate Paul?<
PAUL WON HIS DIVORCE CASE.

>go<

TEXT PROCESSING COMPLETE ON DIVORCE-STORY



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CYTRUS

ARE YOU INTERESTED IN MUSHE, OR
VANCE? (M OR V): "MUSHE"

"(DIALOG2)

>When was the last time you were in Egypt?

Inferring a diplomatic trip
answering question using time con-
tent

ON DEC 10 1978.

>Why did you go there?

answering question using previous
content

TO NEGOTIATE THE CAMP DAVID ACCORDS.

>Who did you talk to there?

Inferring unaffiliated political
meeting
answering question using previous
content

WITH AMMAR SAQID.

>How many talks over were held. Begin?

Inferring a social political occasion
YES, MOST RECENTLY AT A STATE DINNER
IN BIRAL, IN JAN 1980.

>What heads of state have you met?

Inferring a diplomatic meeting
searching directly for S&MET

applying strategies to search memory

searching for s&CONFERENCE

searching for s&VPVISIT

searching s&VPVISIT instance for

S&MET

searching for i-NEGOTIATE

WITH HADJAL, MEHANCHEN BEGR, MU-
STAFH ROUAL, IAN SMITH, PRESIDENT AS-
SAD, KING HUSEIN, AND AMMAR SAQID.

>Last time you went to Saudi Arabia, where
did you stay?

Inferring a diplomatic trip
answering question using time con-
tent

IN A PALACE IN SAUDI ARABIA ON SEP 23
1978.

>Did you go sightseeing there?

answering question using previous
content

YES, AT AN OILFIELD IN DHAMAN ON SEP 23
1978.

CYTRUS

ARE YOU INTERESTED IN MUSHE OR
VANCE? (M OR V): "MUSHE"

"(DIALOG2)

>Where are you today?

Inferring a diplomatic trip
PROBABLY IN THE UNITED STATES
* ON JUN 14 1980.

>Where were you three weeks ago?

Inferring a diplomatic trip
IN EUROPE.

>Why did you go?

answering question using previous
content
TO TALK TO ANDREI GROMYKO.

>Who did you talk to?

Inferring unaffiliated political
meeting
answering question using previous
content

TO NATO IN BRUSSELS ON MAY 14
AND TO ANDREI GROMYKO IN VEN-
ICE.

>Did you give a speech?

answering question using previous
content

YES, ONE TO A GROUP OF REPORT-
ERS AND ONE TO NATO.

>Are you going to Asia?

Inferring a diplomatic trip
YES, THIS MONTH.

>Who will you talk to?

Inferring unaffiliated political
meeting
answering question using previous
content
TO NATO IN AMMAN, JORDAN.

Figure 8. The Cytrus program

knowledge of one domain — terror-
ism — and it could add to that
knowledge by absorbing information from
what it read into its memory.

We were attempting to address
two different problems in IFF. First,
if we ever are to automate the read-
ing of news wires, we will have to
build in detailed knowledge of the
subject matter to be read. IFF con-
centrated on only one domain of
knowledge so that it could attempt to
build up that knowledge automati-
cally, by learning from what it read.
The second goal in IFF was to put all
the knowledge structures we had de-
vised into the same program. Pump
used only scripts. IFF used plans, goals
and scripts and also had a memory.

IFF was written by Michael
Lebowitz as part of his Ph.D. thesis
at Yale. The major intention of IFF
was to add to its knowledge struc-
tures by forming new structures as a
result of what it read. The program
made a new generalization about
Basque terrorist attacks, which it
constructed for itself after reading the
following three stories. Often the
generalizations IFF made were a bit
spurious. Nevertheless, it was begin-
ning to update and expand its own
memory structures, and that was of
critical importance.

Boris. After spending a fair
amount of effort on news stories, we
began to be concerned that there was

a range of phenomena in understand-
ing that did not come across on the
news wire but nevertheless posed
significant problems. We wanted
also to see how we could improve our
general story understanding capabili-
ties by using a new set of memory
structures we were devising, ones
more suited to facilitate learning by
cross-contextual understanding.

We created a more fully integrat-
ed program that relied on a model of
human beliefs and interactions that we
could use in understanding little
snippets. This program was
called Boris. (We were feeling a bit
whimsical in naming this one. In
fact, we named it long before we
wrote it. The name expresses our
frustration with some of our previ-
ous programs. Better Organized Reas-
oning and Inference System.)

As our lab grew, we started to add
new faculty and projects, which of-
ten were not run directly by me. The
Boris project was supervised by
Wendy Lehnert, who by this time
was a professor at Yale. Boris was
written by Michael Dyer as part of
his Ph.D. thesis. Tom Wolf and Pete
Johnson also worked on the project.
Boris was a rather complicated pro-
gram that employed new parsing
techniques, new inference tech-
niques and used different memory
structures from those we had been
using (see Figure 7 on B/15).

The language understanding pro-
gram we had built so far were satis-
fying in that they showed us we

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The ideal alternative for ANSI and UNIX environments.

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Packed with power and versatility, the QVT 108[®] is more than equal to the most demanding management-level tasks. It provides full emulation of the TeleVideo 925, 920 and 912, and out-smarts them all with 22 user-programmable functions, 12 editing functions, two pages of screen

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QVT-109.

Made to order for OEMs and systems integrators.

This is the terminal of choice for anyone in the business of systems design. Our new QVT 109[®] provides all the most-wanted editing features, for complete applications flexibility—19 user-programmable function keys (38 functions). Six non-embedded character attributes. A truly buffered auxiliary port for data transmission at a different baud rate from the main port. And a rugged and responsive capacitive keyboard. There are a host of other utilities and options, plus the superior ergonomic design of all Qume terminals. Whatever specs you're designing to, you'll find the QVT 109 to be the best, most rewarding solution.

All Qume editing terminals come with the following features and conveniences:

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[illegible]



QVT-311GX.

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Qume's new QVT 311GX, monochrome graphics terminal provides full compatibility with both Digital's VT 125 and Tektronix 4010/4014 series, at a price substantially lower than either! It's the first terminal that gives you the mobility to draw on an entire universe of graphics software—both PLOT 10 and ReGIS—plus full ANSI text-editing capabilities. It provides full bit-mapped graphics on a 14" non-glare white snow phosphor screen, with a resolution of 640 x 480 pixels. Two graphics planes allow for the production of four shades of gray. And there's an optional mouse for complete flexibility in graphics editing. All Qume ergonomic features are standard on the QVT 311GX, including a 14-inch screen and a responsive, long-lasting capacitive keyboard.

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Compatibility: Hewlett-Packard 7470A

QVT 511GX

Max. Addressable Memory: 4096 x 4096 points
Display Resolution: 640 x 480 points
4 shades of gray
Graphics Printer: Digital LA 30,
Epson FX 80 and MX 80
Compatibility:

QVT 511GX

Max. Addressable Memory: 4096 x 4096 points
Display Resolution: 480 x 360 points
8 colors from a palette of 64
Graphics Printer: Tektronix 4695 color
graphics copier
Compatibility:



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IN DEPTH/EXPERIMENTS IN AI

could do what we set out to do. But they also were frustrating because each showed us a new set of problems that were involved and lay as obstacles on the road to automating the understanding process. These programs became more and more complicated to write as they encompassed ever more processes and greater knowledge.

Cyrus. Perhaps the program we have written that best illustrates just where we are going is Cyrus. Cyrus stands for Computerized Yale Reasoning and Understanding System. (In this case, we knew the name had to be Cyrus; it was just a question of figuring out what Cyrus could be an acronym for.) Cyrus was a memory program that received from Frump all the stories it could find about Cyrus Vance, who was Secretary of State at the time. (The pro-

Cyrus compiled a professional and personal history of Cyrus Vance. This was an attempt to begin to model the memory of a particular individual. In some sense, the program thought of itself as Cyrus Vance.

gram later switched to Muskie.)

Cyrus compiled a professional and personal history of Cyrus Vance. This was an attempt to begin to model the memory of a particular individual. In some sense, the program thought of itself as Cyrus Vance. (Well, we wrote it that way. It is hard to say that this program thought anything about itself.) We wanted the program to change constantly on the basis of its new expe-

riences. It succeeded to some degree, but its success is not quite the point.

In a sense, Cyrus — or programs that will succeed Cyrus — will replace the large data base programs we have today. The problem with today's data bases is that they don't know what they know. Cyrus reorganized itself continually to reflect best what it knew.

And, although it was only an experiment, it taught us a great deal

about what it means to remember.

Cyrus was written by Jane Kolodner as part of her Ph.D. thesis at Yale. Perhaps Cyrus' most interesting highlight was its ability to answer questions about which it had no direct information. When Cyrus responded that Mrs. Begin had met Mrs. Vance (see Figure 8 on ID/16), the program actually was just guessing. It figured that if it could find a situation when both women were likely to be present, then it could assume that they had met. The program thus searched for social situations (to which wives might have been invited) that occurred on trips that either one of the men might have made with his wife to the home of the other.

Finding a state dinner in Israel

The problem with today's data bases is that they don't know what they know.

that occurred during a trip on which Mrs. Vance did accompany her husband, it assumed the rest.

The road ahead

On a crude level, both Cyrus and IPP could be reminded of a previous story and compare the two in search of some general characteristics. For example, IPP researched some generalizations on its own derived from what it read. The program decided that every terrorist attack in Ireland was by the IRA; in every terrorist attack in New Zealand, the weapon was a boomerang; and that every time there was a hijacking in Lebanon, it was in protest of the disappearance of a Shiite Moslem leader.

But more and more, we came to realize that scripts, plans, goals and cross-textual referencing weren't the only crucial elements of an understanding system. Understanding a story can involve everything a person has ever known. We began to realize the importance of a dynamic memory, one that changes every time it understands a story.

A dynamic memory program would be able to find experiences

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The West Virginia Department of Human Resources is to issue a Request for Proposal (RFP) or direct contract to the procurement of a fully automated Medicaid Management Information System (MMIS) to be used by the Department of Human Resources to automate the processing of Medicaid claims and to provide a means for the Department to monitor and control the Medicaid program.

Interested parties should send a copy of their proposal to the following address by November 15, 1984:

Proposals and Administration
State Procurement Division
Capital Building, Room 3118
Post Office Box 5200
Charleston, West Virginia 25301

Attention: Kathy Hays, Tender Buyer

NOTE: A copy of this notice is

to be placed in the files of the Department of Human Resources. The Department of Human Resources is a fully automated Medicaid Management Information System (MMIS) to be used by the Department of Human Resources to automate the processing of Medicaid claims and to provide a means for the Department to monitor and control the Medicaid program.

The notice of intent should state that the vendor has been selected and that the vendor is to be awarded a fully automated Medicaid Management Information System (MMIS) to be used by the Department of Human Resources to automate the processing of Medicaid claims and to provide a means for the Department to monitor and control the Medicaid program.

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IN DEPTH/EXPERIMENTS IN AI

We are trying to develop a system that is capable of building up an increasing number of memories about different situations it has experienced, which it then can use in understanding even more stories and experiences.

from its past to help it understand a new event. A program equipped with such a memory would read a story differently each time it saw it, since it would be updating memory the first time, but be bored the second time. Or, it might learn more from it the second time, if it had gathered many new experiences that related to the subject of that story in the interim.

Our early programs never changed their processing structures as a result of

reading a new story. They served to lead us into what may be the most complicated elements of any understanding system — the memory problem and the learning problem. Cyrus and IPP were our first attempts at getting programs to learn.

We are now trying to develop a system that is capable of building up an increasing number of memories about different situations it has experienced, which it then can use in understand-

ing even more stories and experiences. We don't have the same knowledge of earthquakes or even of driving a car, because we don't all have the same experiences with earthquakes and cars. We don't just want to have to put in everything we have ever known about earthquakes; we want to enable the machine to generate its own knowledge of them derived from its experiences.

Reading a story should change the way we read a later story on the same subject. Creating a belief system with some knowledge structures about what humans might do in certain situations depends upon the development of good representational methods. Getting a system that can use all its beliefs at any given time and modify them on the basis of what it reads, one that can learn from its experiences, requires an even more flexible representation than the kind we had been using.

How do people expand their knowledge so that it helps them with everything, so that it changes the way they parse sentences? Children constantly dream up generalizations, see when they fail and modify them on the basis of their experiences. Intelligent readers learn from what they read — that is why they read.

It is clear, then, what we must do next. What we need systems with flexible, changeable structures that can learn while doing it.

About the author

Roger Schank is professor of computer science and psychology at Yale University, chairman of the computer science department and director of the Yale Artificial Intelligence Project. He is also chairman of the board of Cognitive Systems, Inc., in New Haven, Conn.

Peter Childers is a recent graduate of Yale University.



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The pursuit of data integration

By Thomas Womeldorff

Marketing sells one product, manufacturing makes another, engineering adds changes, and accounting tries futilely to balance it all on the books. Therein lies the need for data integration.

Integration takes on almost as many definitions as there are vendors claiming to provide it. True integration between all operating systems is, in fact, one of the primary ways in which organizations are beginning to move forward in pursuit of a competitive edge.

So what constitutes true integration among application systems? At the highest level, integration is simple. It means that a software mechanism ties together all of an organization's support systems in a way that mirrors the way the organization actually does

business. Furthermore, that mechanism is capable of evolving with the organization as its business requirements change.

From a functional level, integration must be understood as multidimensional. Truly integrated systems provide data integration, transactional integration and operational integration.

Data integration provides a company with a common set of facts. All information about related business activities is stored in a common repository and updated as events affecting that data occur. Marketing, manufacturing, engineering and accounting all use the

IN DEPTH

IN DEPTH/DATA INTEGRATION

Events occurring in one system must update the data base and communicate those changes to other systems or users who, in turn, will use the data to plan or replan their business activities.

same data to make decisions about their particular role in selling, manufacturing, designing or costing any given product.

Traditionally, each operating group had its own system, which used its own data to make decisions about its activities in the delivery of products or services. The problem with this approach is that very seldom, if ever, does all of this information agree. Marketing sells one thing, manufacturing makes

something else, engineering makes changes and accounting tries futilely to make it all balance on the books.

In this scenario, no one really knows what the "facts" are. The only way to develop any reliable information that portrays uniformly the facts of the business is to integrate fully all the data about the business.

Full data integration requires the use of normalized data, data reduced to its lowest common denominator.

This normalized data is then stored in subject data bases that contain all the information about a given subject. Vendors, for example, could be a subject.

This data, stored once for everyone, is made available to any system or user requiring it. Vendor data would then be accessed by purchasing, accounts payable, engineering and manufacturing. Everyone in the organization would have access to the same vendor information, and each department would be in constant communication, via the data base, to make effective business decisions.

Data integration is really nothing new. The concept was introduced by data base management systems more than 16 years ago. But because the architecture of data bases varied with the requirements of the applications they served, we find ourselves today with almost as many data bases as applications. As a result, instead of having redundant data, which the data base was designed to eliminate, we now have redundant data bases and still no real integration.

The next dimension of integration is transactional integration. Just as data integration ties all systems and users to a single set of data, transactional integration ties together all the events or transactions that occur in these systems.

Events occurring in one system must update the data base and communicate those changes to other systems or users who, in turn, will use the data to plan or replan their business activities. This coordination and communication of activities ensures that events in one area of business appropriately affect related events in another without the need for manual intervention.

To accomplish this, the programs in these diverse applications must be triggered by changes in the data base. These changes, in turn, produce replanning logic or exception reporting to ensure that operating objectives are effectively met. In addition, the system must produce appropriate operational and financial audit trails, as well as historical records, to reflect the source and sequence of these business events.

Transactional integration, like data integration, is not a new concept. But its application has been broadened and extended as the nature of integration has matured.

Operational Integration

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IN DEPTH/DATA INTEGRATION

will be largely wasted.

Consider this example, using the entry of a customer order, to illustrate the point. A customer calls in an order for a standard item to be delivered within normal lead time. The order entry clerk accepts the order, without confirming availability through the production schedule, because such a confirmation would require signing off the order entry system and signing onto the production scheduling system.

Because this is a time-consuming and awkward procedure, it is rarely, if ever, executed. Customer and production problems result from these borders or barriers between systems because valuable information, although available, goes unused.

A solution to this common problem involves the integration of systems so that screens from one system (production scheduling) can be accessed without sign on/off procedures from the operator in the order entry system.

This facility allows an order entry clerk to easily check production schedules, inventory records, shipping schedules and even customer credit information to make sure that the order can, and should, be filled under terms confirmed at order entry time.

Ideally, all screens and reports across all applications should be presented in a common format, using common terminology and sharing a common security mechanism. As a result, once someone learns a single application system, that person should be able to learn additional systems quickly and easily. This can dramatically reduce an organization's training, documentation and support requirements.

Some software people have used the term "borderless" to describe this aspect of integration. To someone who does not routinely use a CRT terminal, this may not seem important, but the fact is, if it is not convenient to access a particular inquiry function, that information will go unused, no matter how valuable it may be.

Software solution

The only practical way to achieve these dimensions of integration is through the use of a complete set of complementary software designed to support the needs of every level of the organization and the various aspects of data processing.

Support for predictable business events (recording shipments, maintaining customer master files, tracking on-hand inventory and so on) should all be largely available from the standard application packages. These functions build and maintain a single corporate data base organized under a common set of data management tools.

Unpredictable information needs or queries (for instance, "How many orders for Part No. 354-A came from the western region in the last 90 days?") should be supported by the data retrieval and decision support systems (report writer, word processing, electronic spreadsheets, graphics and so on) that are general-purpose in nature and that, in turn, integrated with the data management software and therefore common to all the primary application systems.

A fourth-generation application development language should also be used to bridge the gaps between the

application packages and the unique business needs of a particular company. With such a system, it is possible to extend and enhance the packaged systems for maximum functionality and performance while maintaining the software in a manner that accounts for incorporation of future enhancements from the vendor.

Communications link

In order to utilize fully the power of microcomputers, an integrated mainframe-micro communications link should allow personal computers to download, manipulate and upload information from or to the central data base. Again, the important point is that this function can be performed against any portion of the data base, without regard to the system that maintains the information

that is needed.

For organizations with multiple CPUs, integrated network management software should provide efficient communications with far-flung divisions or departments on an organizationwide basis.

In the larger sense, integration provides a company with the ability to organize and manipulate information with maximum ease and efficiency. Organizations that are able to achieve fully dimensional integration of their computing resources are the ones that will be the most competitive in the future.

Benefits of integration

Clearly, well-coordinated organizational activity supported by integrated information systems will have a major impact on success in the marketplace, profitability and,

ultimately, the relative success of the organization as a whole.

A organization with an integrated software system can expect such tangible benefits as:

- Improved manufacturing performance
- Shorter lead times for planning
- Improved inventory control
- Accurate vendor performance analysis (delivery, quality, price)
- Improved vendor negotiations (reduced costs)
- Accurate payments
- Reduced clerical effort
- Improved cash flow visibility
- Improved management communications

These benefits illustrate the positive impact integration can have on an organization. A common by-product of the implementation of a closed-loop manufacturing resource



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planning II system is that for the first time the purchasing manager, the production manager and the shop foreman actually begin to communicate with each other on a regular basis. Computer systems with arbitrary borders actually inhibit rather than enhance this process.

In many organizations these people often have little or no idea of how much they have in common or how much impact their actions have on the company as a whole. With more integrated systems, they begin to see how their particular arm of the organization is critical to the effective operations of other areas.

The availability of consistent, reliable, easily accessed information from an integrated set of systems can provide benefits beyond those that are obvious. When the artificial boundaries between organizational

functions like manufacturing and accounting are removed, people naturally begin to apply their own native ingenuity to day-to-day activities.

(Of course, system security is necessary to avoid too much ingenuity.) Easy access to consistent, reliable and timely information can create a climate for creativity throughout the organization. People can begin to find new ways to use information to solve problems, improve efficiency and generally raise the overall performance of the organization as a whole.

Why not everyone?

Probably no one would argue against the benefits of integration. If so, then why hasn't every organization implemented an integrated information systems environment? Some organizations are actually doing it, especially smaller, younger companies. Many of the largest companies, however, are not yet ready, for a variety of reasons.

Manufacturing systems have only recently matured to the point where financial systems have been for a number of years — to the point where there is a high degree of agreement as to what the basic required functions are in a system. Usable, integrated manufacturing software was not available a few years back.

Software vendors tended to focus on specialized application areas in the past. Few even considered the concept of integration beyond that scope, much less committed themselves to developing it.

Even when the potential has been recognized, the cost and difficulty of developing what amounts to a single (though modular) system that encompasses application support for all aspects of a business, as well as general-purpose data management and retrieval tools, has been too great for all but the largest software vendors.

The world of application software is, however, changing dramatically. A whole new generation of application software is emerging, along with a new generation of software companies. The companies that build the leading data base management systems (the foundation for all applications) are now building major packaged application systems designed to take advantage of this emerging software technology. These new-generation system builders are uniquely positioned to build these systems because they alone have laid the required foundation for such systems.

This new generation represents great strides toward truly integrated systems. They represent the foundation upon which companies are beginning to build their information systems for the 1990s.

With this new generation of software now becoming available, the key to integration for any large company is long-term planning. While you may be wrestling with a veritable fruit salad of application systems right now, it doesn't have to remain that way. By stepping back and taking a global approach, a long-term systems investment and implementation strategy can be devised.

About the author

Thomas Womeldorf is senior product manager for application software at Cincom Systems, Inc. in Cincinnati.

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IN DEPTH



MOVING MIS AND THE COMPANY INTO THE FUTURE

By Robert Peterson

Through all the technological advances of the past, the MIS charter remained the same — we provided systems and computer power to the company. Now that charter will change. The specific industry and organization we serve will determine precisely how we change. MIS will truly become a services group. We can either plan for that transition and guide its outcome, or we can ignore it and conduct business as we always have.

If MIS is to remain a viable, dynamic part of the corporate community, we must move quickly to effect that transition. Otherwise, we will become merely a utility function, driven from the outside and responding solely to specific directives. The organization

will most certainly suffer, even while never realizing it.

Being an executive in MIS is not for the weak of heart or those who require a highly stable environment. We have seen the discipline change so dramatically, in a relatively short time, that experience more than 10 years removed is nearly extraneous. MIS now rates as one of the 10 most stressful occupations, according to recent studies. The future doesn't promise any respite.

Over the years, the bulk of the changes have been technology-driven. The raw power of hardware and software has yielded opportunities for information facilities. These opportunities presented themselves in such a way that the MIS professional was in a

IN DEPTH/FUTURE OF MIS

position to market them to the customer community. What MIS didn't want to address, it didn't market — a very nice situation indeed.

We now find ourselves in a different situation. The advent of personal computers, end-user development systems and a general rise in computer literacy has put an extraordinarily high level of pressure on the MIS professional. We are now being driven into a new age by our customers who are no longer content to wait for us to understand the issues facing the organization. The implications of this transition drive into the very framework of how we operate and how we support the corporate community.

Anticipating the impacts

With the wide range of new opportunities, technological variations and choices facing us today, how can we predict the future with any degree of success? The answer is that we cannot. There are simply too many issues on the horizon; any number of them could present themselves as prime issues. What we can do is make ourselves aware of the major issues facing us in our specific environment and begin to prepare as best we can for the future of highest probability.

This isn't something done over coffee one morning. It is a down to earth, well-communicated planning effort that takes place constantly among the senior staff of the MIS group. The planning effort includes assigning staff members to study options and alternatives, produce study members to explore options and alternatives, produce study reports on those efforts and present them to the senior staff.

It means a concrete strategic plan that concentrates not only on the business environment but on what MIS will do to assure its viability. More than anything else, the planning effort means promoting that idea to upper and middle management and gaining their cooperation and commitment.

The key impact areas will vary from organization to organization. But even if they didn't, the priorities and marketing method would vary to such an extent that the issues would not even look the same. There are, however, some obvious issues facing all of us today.

End-user computing

Probably the greatest impact for the future that exists today takes the form of end-user computing through the use of decision support systems, statistical analysis and presentation capabilities, data base managers and application generators. We have actually entered an age where the user may not need us — or at least the wherewithal exists by which he can make a case for it. It is a difficult argument to fight, especially in the abstract.

If we honestly evaluate the probabilities for the future, end users will be generating the vast majority of their own systems. MIS will concentrate on the very complex portions, building architectural frameworks around the user's efforts and protecting the corporate information base. With all this, it is safe to assume that systems development as we know it today — with its feasibility studies, analysis, programming and testing phases — will go the way of the dinosaur.

Futurists have tried to predict time frames for this progression for years with little or no success. But the changes will take place — and in the not-too-distant future. The inevitability of this progression is stamped in the power of the software on the market today. That power is nowhere near what it must be to totally support end-user development, but the progress toward that power level is now taking place. The realization of the capability is just around the corner.

The opportunities for disaster in this type of environment are staggering. With all the emphasis placed on computer literacy in recent years, we must never forget that literacy does not mean proficiency or professionalism. Uncontrolled information manipulation provides incredible opportunities to misrepresent key cor-

porate decision issues.

When this happens today, the hope is that the bureaucracy of the development cycle itself will preclude strategic decisions being made on faulty information. That certification of systems is a by-product of an independent development organization. With end users making the effort themselves, certification will not necessarily take place — unless MIS plans and implements mechanisms to ensure its existence.

It is unwise to confuse computer literacy with computer expertise. Literacy will allow the general user environment to develop solutions to its own problems — given the framework to make sure those solutions conform to good practices and corporate goals. It is the computer professional who will provide that framework and monitor compliance with

those practices.

Realistically, there is little hope that MIS can keep pace with the accelerating demand for computer solutions to business problems. In a competitive marketplace, an emphasis exists on the ready availability of usable information. Providing that information base requires systems for capture of the daily activities, entry of demand, maintenance of product or service flow and delivering that product to the end customer.

Even with the influx of fourth-generation languages, increasingly sophisticated data base management systems and scientific methodologies, MIS continues to fall behind in the demand for new systems. Backlogs increase to the point where they are no longer really backlogs but daydreams. It is a significant and severe problem.

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IN DEPTH/FUTURE OF MIS

Since most organizations are not likely to create an MIS group of infinite size, the solutions must come from quarters other than improvement of the conventional mechanisms of developing and delivering systems.

We will see an increased sophistication in the level of shell-package software to the point where we will purchase core units that can be modified and maintained by the end user with MIS guidance.

In order for this to be feasible, the software producers will have to change their approach from a single approach solution to the creation of tool kits tailored to generic applications — accounts payable, manufacturing resource planning, check processing and so on. With the central core and adaptable peripheral modules, organizations will still have the

The typical contract/consulting groups will have to change and improve as well. These groups can no longer afford to be body shops that ship out programming talent.

ability to create an endemic hybrid that will make their approach different from their competitors.

We should see a higher use of contract and consulting services at the expense of internal development staff. This change means a lowered investment for permanent staff as well as the ability to apply more specific skills to specific problems. MIS will remain the coordinating force and communication vehicle between the company and the vendors.

The typical contract/consulting

groups will have to change and improve as well. These groups can no longer afford to be body shops that ship out programming talent. They must evolve into stable, professional organizations that can provide specialized talent at all levels, from project management to coding.

A substantial portion of the development effort will be accomplished directly by the user community. Their effectiveness will be largely dependent upon a number of factors, including evolution of software

products, continued improvement of the price/performance ratio of hardware, availability of a reasonable data-base approach and the evolution of the MIS professional's consulting capability. The last factor may be the most important relative to the health of the organization.

MIS, if nothing more, is quite competent in the role of project management. We take it for granted, but the typical cycle of project to project is something that everyone is not inherently good at. With end-user development we will see the project mode of doing things moving into the areas where steady-state maintenance is the prime orientation. Project roles are somewhat foreign. One of the major contributions the MIS professional can make is to bring project management and control expertise to the typical user development efforts.

Dispersing of MIS

In many organizations today, we see a subtle dispersing of many traditional MIS functions outward into the user community. A substantial portion of the cost/benefit efforts are there. The development methodologies shift a large part of the responsibility for analysis and design, and in many organizations the testing efforts are the user's responsibility. In a truly pragmatic sense, it represents a logical and healthy translocation of responsibility.

However, like a train gaining momentum, it can be very difficult to stop. Often, functions are transferred with only a vague understanding of what ancillary activities are implicitly transferred. These ancillary activities can very quickly come back to haunt us in very subtle ways.

MIS is independent of the political motivations of other departments. Therefore, it takes (or should take) a less parochial view than any single area. MIS tends to seek solutions without bias that serve and protect the entire organization. When any single user area takes responsibility for the design and justification of a system, there is less protection for the balance of the company.

The only way to deal with this situation is for MIS to take an active role in review and recommendation for all development efforts. That role is substantially different than total control of a project and requires a different view and talent. Understanding these differences and establishing the procedural mechanisms to ensure success is important for the future.

Data base environment

The promise of the integrated corporate data base with its ability to secure and protect the corporate data resource has had, at best, a spotty realization. Few organizations today can honestly say that they have successfully implemented a data base facility that meets the goals they started out trying to achieve. It appears unlikely that we will ever see such a realization.

The limitation occurs for two reasons. First, we have never been able to truly communicate the abstract need for an integrated data base to the management of our user community.

With some notable exceptions, management has never seen the need to get overly excited about the opportunity, at least to the point of

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IN DEPTH/FUTURE OF MIS

dedicating substantial time to the idea.

Secondly, it is a substantial expense to create subject data bases with the inversion capabilities that allow the gains to be realized.

The more systems we install — or the users install — the further away we find ourselves from the integrated solution. There can be no argument as to the advantages of an integrated, integral data base management system. However, we must be pragmatic enough to realize that the concept may never be realized and take steps that alleviate some of the problems of not having one.

This is far from an exhaustive list of major issues facing MIS today. The emergence of the information center, the personal computer revolution, enhanced communications ca-

pabilities and a host of other issues face the MIS executive today. Where as it is difficult to perceive where these issues will take us, it is essential that we take steps to ensure that they are not the cause of our demise in the corporate structure. That demise is a very real possibility if we do not adequately determine where we go from here.

Planning for transition

The planning function within MIS typically concentrated on presentation of business issues and how we will react to those issues. While that is certainly essential, it is only two-thirds of the need at best. What we cannot ignore are the internal aspects of the department and how we will react to our own future.

The issues facing MIS as a discipline should be defined and dis-

cussed relative to their importance to the specific environment. For instance, the issue of hierarchical data bases with decision support facilities for all knowledge workers is certainly less critical in a mill environment than at a statistical research firm. It is imperative to concentrate on the issues that are most likely to impact you specifically. Those are the ones that are most urgent, and they are probably the only ones to which your management will react.

The implications, cost factors and competitive impacts should be highlighted as well as the steps to protect the organization from mistakes in each area. We should project a comprehensive picture of where MIS is going for the next five years and how that transition will affect the company.

Typically, management prefers to

relate to action-plan type scenarios. However, in an evolutionary environment we are not always dealing with subjects that translate readily into actions. While management may not like to deal in that framework, it is simply going to have to if its information resources are to remain valid and useful. The generic, abstract issues must be stated and the department's plans to facilitate the transition described.

These abstract issues can be a far more traumatic set of problems than the well-directed specifics. They tend to be molded into the framework of how the department does business and how it interacts with the other groups within the corporate body. The following issues deserve a high level of consideration.

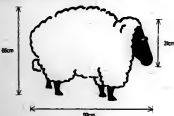
Place for your people?

In the MIS organization of tomorrow (not 10 years from today, but tomorrow), the prime emphasis for development personnel will be on the attributes of consulting, communicating and coordinating. These attributes will be the interface point to the user/developer with a prime responsibility for protecting the overall organization from information abuse and misuse. The clustered programmer/analyst will be a creature of the past, except in highly specialized cases.

If the conventional development approach has characterized your organization for the past several years, you are likely to find yourself with a rather striking mismatch of needed skills to possessed skills. If that is the case, ask yourself what steps you can take to rectify the situation in the long run and how you can migrate your personnel skills over time.

The comprehensiveness of that plan is key as is its visibility. The plan should be communicated effectively to the staff so it does not feel its future is in doubt. Being reasonably intelligent individuals, the staff will quickly perceive the changes taking place and be quite sensitive to the implications. It is imperative that they do not feel threatened.

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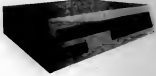
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IN DEPTH/FUTURE OF MIS

If the senior-level management of the company you serve chooses to avoid the issues, refuses to hear the logic behind the need for effective planning and/or considers MIS to be a necessary evil — find yourself another organization.

The first choice is the one typically taken and the least likely to succeed. It is expensive, penalizes aggressive dedicated individuals and stifles innovation.

The second option is the only rational approach and will require the commitment of management for reallocation of some existing personnel, raising the selective hiring standards and some costly training. However, in the long run, the cost is substantially lower and the re-

sults more lasting than trying to create systems for gorillas.

Turnover rates

It is nearly impossible to build any type of future organization without a stable core of senior people to build around. People are always the key ingredient in any attempt to change the general direction of an organization. Often, the change itself will produce or aggravate a problem turnover rate, equally as

often it will correct one.

MIS has historically been satisfied that turnover in excess of 25% was inevitable. In some major cities where competition is abnormally high this may be the case. However, accepting those rates is the prime guarantee that they will continue. Only by determining the bottom-line reasons can we ever hope to overcome them.

This has been a sample of the types of generic issues facing the typical MIS organization. They should not be surprising nor enlightening. They have appeared in the press for years with long, expert treatments of each subject.

But reading about the issues facing us is not enough. Until they are addressed and analyzed and approaches are devised for your organization, by you and your people, they will not be solved.

It is not enough to say that the MIS we know today will not exist tomorrow. It is not enough to convince management of that fact. You must understand what the transition means to your organization and take steps to make that transition take place in as orderly a fashion as possible.

Establish strategy sessions among the senior members of the MIS staff, and detail the prime issues. Roll those down into very pragmatic statements on impact, probable time frame and solutions. Establish study teams to determine how other organizations have addressed the issues or plan for them yourself. Create formal plans, procedures, policies and practices to ensure that the organization is properly serviced.

In any case, plan for the transition and communicate those plans to management. Spend the time now to make your staff part of that planning effort, not casual observers. The opportunities of the future will be realized by the aggressive, conceptual thinkers who define the leading edge, not those who follow. It is not a simple matter of being sophisticated but rather of ensuring the survival of MIS in your organization.

About the author

Robert Peterson is an independent consultant specializing in MIS. He lives in Cary, N.C.

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IN DEPTH



WOMEN

IN COMPUTER SERVICES

By Judith Larkin

Recent data from personality tests, questionnaires and a job satisfaction survey sheds light on three areas: the psychological characteristics of women in DP, the sources of satisfaction and dissatisfaction in their jobs and concerns that might be addressed through workshops and training.

Over the past three years, I have conducted workshops on leadership skills for systems engineers at the Computer Task Group Education Center in Buffalo, N.Y. The systems engineering group is composed of the tech-

nical people who work as applications programmers, systems programmers and systems analysts.

During the three-day management training course, I administer the 16 Personality Factor Questionnaire (16PF), an adult personality test whose reliability and validity have been well established. A multipage, computer-generated description of the individual's personality, which is later sent to participants, was designed to help them gain insight into themselves and plan their careers.

IN DEPTH/A STUDY

The women subjects of this study are technicians with the title of systems engineer. They function as programmers, programmer/analysts and systems engineers, providing professional services in the design, analysis, implementation, maintenance and management of software systems. The majority of the women who provided data for this study are employed by Computer Task Group, Inc. and are spread throughout the country, doing contract computer work at different client sites in a variety of industries.

This discussion also reflects the input of a number of women at Computer Task Group and several other software companies who have advanced from the technical ranks to become managers of data processing personnel.

In the management education pro-

From these studies, the DP woman emerges as a committed professional: intelligent, independent, persistent in striving to accomplish difficult tasks and maintain high standards, assertive in attempting to control and impose order on the environment.

gram, I have tested 58 women systems engineers, 11 of whom became managers, and 179 men, including 39 who were or have become managers. The results discussed here are based on the scores of 47 women, all non-managerial systems engineers. Data on the men was discussed in a previous Computerworld article (CW, Feb. 21, 1983.)

A group profile on the 47 women

was developed by pooling individual data from the 1977 tests. The results of statistical tests showed that compared with the population average for women, DP women are significantly different on the following dimensions:

1. More intelligent, capable of abstract thinking, bright. They tend to be insightful, fast-learning and intellectually adaptable.

2. More assertive, aggressive, competitive. This trait is also expressed in independent-minded behavior, sometimes unconventional and headstrong, that is not easily upset by authority.

3. More conscientious, persistent, persevering and determined. This personality factor characteristically expresses itself in a drive to do one's best and a high level of achievement motivation.

4. More venturesome, socially bold. The combination of toughness and sociability is important in occupations that require dealing with people and emotional situations—but especially so if one is to be comfortable venturing into such diverse work environments as banking or manufacturing to tackle work assignments.

5. More tough-minded and realistic. Not prone to dwell in fantasy or sentimentality, DP women take a tough, practical, realistic (no-nonsense) approach to situations. They tend to keep to the point and act on practical, logical evidence.

6. More experimenting, liberal, questioning. This trait is expressed in a tendency to experiment with solutions to problems, an analytical and questioning approach to problems, a desire to be well-informed and a tendency to like innovation and to be willing to break with customary and traditional ways of thinking. (Executive, university professors and scientific researchers also tend to show high scores on this characteristic.)

These results are consistent with the findings of Charles Woodruff, who used a different instrument to identify the strength of various needs in a group of 50 women in DP. Compared with the population of women in general, the women in Woodruff's sample showed a higher need for achievement and need for understanding—a desire to understand many areas of knowledge, to study their intellectual curiosity. Similar to the high score on persistence in the present sample, Woodruff's subjects showed a high score on "endurance"—a willingness to work long hours and not give up in the face of difficulty.

Other needs strongly in evidence included a high need for dominance—the desire to have control over the environment and to influence or direct others; a need for order—the desire to be organized and to avoid confusion or clutter; and a high need for cognitive structure—which results in a dislike of ambiguity and a desire to find answers based on definite knowledge rather than guesswork.

Personality profile

From these studies, the DP woman emerges as a committed professional: intelligent, independent, persistent in striving to accomplish difficult tasks and maintain high standards, assertive in attempting to control and impose order on the environment. J. Daniel Conger and Robert A. Zaverucki found in their 1980 study of computer personnel that data processing professionals have higher growth needs than people in any of 500 other job categories they surveyed for their study. They found a strong need for personal growth and accomplishment—the need to be stimulated and challenged and to develop their abilities.

The women in the present study

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IN DEPTH/A STUDY

that the work itself fulfills these needs.

The women were highly satisfied with:

- The feelings of accomplishment they get from their jobs.

- The way their work makes use of their abilities.

- The opportunity to work independently.

- The chance to be creative and develop their own ideas about how to do the job.

- The freedom to use their own judgment and take

"It's still a man's world, especially at the management level. Less competent men are acknowledged over more competent women." "I believe that there is some doubt as to whether or not experience and training carry as much weight for a woman for promotion to management." These concerns appear to be voiced more frequently by women at the higher technical or managerial levels of a company.

Some see the larger problems as residing not in their company's policies, which are judged to be fair to both sexes, but in the attitudes of particular managers who may block women's advancement. Others are concerned with the more general problem of societal stereotyping. "When I tell someone I'm in DP, they usually assume some sort of data entry job." Another stereotype is that women are "better with detail" — an excuse to remain

on the technician level.

Women are especially aware of their credibility problems and the need for recognition and acceptance in the male-dominated business world. As one senior systems engineer stated, "Women face unique credibility problems when sent to work at customer sites. Many times the customer feels 'ripped off' for having to pay so much for an 'obviously' inferior technical mind. I don't think we have

the tools to deal with this problem effectively."

Or, as one woman who has moved into marketing said, "Credibility was always a question, as far as my 11 years, I was the only woman programmer or analyst on staff. I had to work harder to even approach the 'equal' ranks." Finally, one marketing representative said, "While I have not generally felt any discrimination, there sometimes is an undercurrent of, 'Who is this

Another stereotype is that women are "better with detail" — an excuse to remain on the technician level.

responsibility for their work. However, as in most surveys of job satisfaction, compensation and advancement were the areas of lowest satisfaction.

There is a striking degree of agreement between men and women regarding many aspects of the job are satisfying and which are not. These results are congruent with the preliminary findings of Philip Kraft and Steven Dubroff, who surveyed 677 software specialists in the greater Boston area (CW, Nov. 14, 1983). Those investigators also reported no overall difference in job satisfaction between men and women and a high degree of job satisfaction with the software field in general.

A sample of women at Computer Task Group, Informatics General Corp., Walker Interactive Products and Xerox Computer Services also responded to a brief survey on the issues or concerns they felt were facing women in the computer field. Their responses are revealing.

At the nonmanagerial level, when asked about their concerns with their job satisfaction issues, women consistently and typically replied, "No problems," or wrote statements such as, "This is the fairest occupation to women," "I see no difference between myself and men in the field," and, "The issues that face women are the same as those that face men in this industry."

Despite the steadfast belief of many in the fairness and equality of opportunity within the field and in their particular companies, there exists, nevertheless, a core of women whose experiences have led them to perceive their work situation differently and who openly express familiar reservations:

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IN DEPTH/A STUDY

broad — and why does she "belong here?" "Some training in how to handle these situations is needed.

Implications for training

I cannot write a blank prescription for workshops or training programs to address specifically women's issues. The professional, independent-minded women I have studied are not likely to find that route acceptable. Ambitions, competitive and desiring equal opportunity to de-

velop and use their abilities, they are likely to argue that it is the men, and not the women, who need the training to be able to accept competent women technicians and managers as colleagues.

Nevertheless, the concern the women voice — about being accepted, for example, or about self-confidence, even when they lack it, or handling difficult managers — are real and need to be addressed in an appropriate context.

Obviously, to be effective or even attended, training must meet the needs of its audience. Women in data processing see themselves first and foremost as professionals in their field. They seek and value professional autonomy and are committed to and identify with the data processing profession. They pride themselves on their technical knowledge and ability and want to be recognized and rewarded on those grounds. Training that segre-

gates them by sex or calls attention to their gender detracts from their occupational self-image.

A technical manager at one computer service company advised, "Do not get hung up on being a woman." And advice from another one: "Don't wear feminist colors on your sleeve. Most people resent it." What counts is being the best at what one does; being a woman in the data processing field is not an issue they want to ad-

dress directly.

What kind of training do women in DP want? Technical training. First, developing and maintaining a substantial skill level is the prerequisite for advancement. Second, a solid base of business-oriented knowledge, in doing applications work in the computer service field, systems analysts need a broad business background in order to move freely in and out of different industries such as banking, insurance and manufacturing. Third, management education. Many who work in data processing perceive management as their career goal. They want training in general principles of management, specific training in their particular company's business and sales training.

Given these priorities, then, where is the place to address the undercurrent of issues affecting women in DP? The professional associations in the computer services industry would be an acceptable and appropriate sponsor of workshops and training for their members.

Within the context of professional development but away from the constraints of a particular company environment, women could learn constructive ways of handling problems such as credibility, stereotyping, lack of self-confidence and male chauvinist managers. These workshops might best include experiential activities such as videotaped role-playing sessions in which the participants could examine and experiment with their style of verbal and nonverbal presentation.

Some of the women's concerns fit into the category of communication skills and could be improved through in-house training offered to management candidates of both sexes. Within their own companies, management increasingly is recognizing that both men and women in data processing have emphasized technical training, perhaps at the expense of developing their interpersonal skills.

Yet, for the manager, interaction is a critical aspect of the job. Women who aspire to managerial careers may already have an advantage over men in the area of social skills but can benefit, too, from additional training in human relations skills. For both sexes, learning to communicate in a nondefensive way, to listen empathetically and express oneself openly and honestly — with superiors, subordinates and peers — is a first but important step in addressing business issues.

About the author

Judith Lortin is associate professor of psychology at Canisius College in Buffalo, N.Y.

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SOFTWARE & SERVICES

Subject data bases prescribed for application portfolio ills

By Paul Miller
CW Staff

BOSTON — Are the following statements true for your application portfolio? ■ Development of new applications requires no modification of old applications.

■ Data for new applications is largely predefined in old applications.

■ Existing data bases need not be significantly restructured for new applications.

■ There are few timing difficulties for installing new applications.

■ Applications last a long time.

If so, do not bother to finish reading this article. But if your DP shop is like most, your application portfolio contains a lot of redundant data held together by a fragile web of interconnections. You would perhaps do well to consider restructuring that data into subject data bases.

That was the message of Ron Ross, editor of the "Data Base Newsletter," in a talk at TSI International's Information Exchange conference held here recently. Data base architectures should mirror the activities of the business, Ross said. But unfortunately, the data bases at many companies have evolved without much rhyme or reason.

The problem occurs in an application-oriented environment in which each application has a specifically defined data base, Ross said. Because data that is used by one application is not optimized for access by another, developers tend to copy and redefragment pieces of the data base to make them usable. The resulting systems often contain significant amounts of redundant data and process-heavy methods like cross-file indexes, transaction files and

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SOFTLINE/STEVEN PFENZINGER

Shopping for an application generator

By Steven Pfenzinger
Special to CW

If you've been shopping for an application generator for IBM's IMS DB/DC or CICS/DC/1 lately, you may have noticed that the market is cluttered with vendors, all promising to have the solutions to your application backlog. The problem is that most of these productivity tools are currently unable to handle all of the processing situations (for example, simple through complex, low and high volume) represented in the backlog or are burdened with design restrictions (for example, screen or trans-

action flows) that limit their functionality. These tools also present learning curve and programmer acceptance problems that have threatened to turn some data processing organizations upside-down.

If you include concerns about the maintenance or conversion of existing systems, the problem gets even stickier. With most of your DP budget going to maintenance, a tool that only aids in new development does not really address the major issue.

Realistically, only a few of the applications generators available today are likely to gain general acceptance and mature to the point that they will address all of the varied applications waiting to be built or modified. As a result, a shakeout in the application generator market over the next two to three years can be expected. This means that buyers

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Pfenzinger is president of IMS Consulting, Inc., an Encino, Calif.-based consulting firm that specializes in IBM's IMS DB/DC and CICS/DC/1. He has 15 years of data processing experience and is a regular contributor to Softline.



Distributing data: What you can do

The topic of distributed data base is one that appears occasionally in the trade press and on conference programs, but always with that ethereal quality that is attached to untried technologies. What is it, and why should you be concerned about it?

Technically, we are still a few years away from a viable environment that allows data to be distributed between—and used interactively by—both central and distributed nodes. Certain data base management systems, like Cullinet Software, Inc.'s IDMS/II, have some distributed capabilities, but not in real time, according to Robert Holland, president of Holland Systems Corp., a consulting and education firm based in Ann Arbor, Mich.

Holland said the industry has traveled about halfway toward the goal of distributed data bases. The rest of the road harbors some serious hurdles of both the technical and organizational kind.

For example, if you have separate pieces of your corporate data base divided up between various departmental computers, what do you do about security? Data validation? Diverse data structures? What if more than one user wants to access a departmental data base at the same time? How do you handle the problems that arise if one node is down for a week?

These are issues that the vendors will have to work out, but you can begin to tackle an equally important issue right now: Figure out how your organization uses information and how it will use it when the information no longer resides in a single location.

The major organizational problem, as Holland sees it, arises from the multitude of data structures that have evolved in

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■ TSI International's new information center product lets end users extract corporate data within limits set by DP/BS

■ Unix is now available on Stratus Computer, Inc. fault-tolerant systems/56

■ Forte Data Systems, Inc.'s new microcomputer-mainframe link offers mainframe file access through IBM PC-DOS commands/57

■ Uccel Corp. also announced a micro-mainframe link at the same time it introduced a loans management system/57

■ D&B Computing Services, Inc. has added several optional features to its Nomad2 product/58

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SOFTWARE & SERVICES

Uccel offers link to its financial tools

DALLAS — Uccel Corp. has announced Perfect Link, a microcomputer-to-mainframe link that provides access to the company's mainframe financial and accounting applications packages.

According to a Uccel spokesman, Perfect Link was designed to link the IBM Personal Computer, Personal Computer XT, 3270 Personal Computer and compatible systems to all Uccel financial and accounting applications as well as IBM Vsam data bases, with selective data selection and downloading capabilities. The link is said to work with a variety of micro spreadsheet packages, including Context Management Systems, Inc.'s Context MBA, Lotus Development Corp.'s 1-2-3, Ashton-Tate's Framework and Microsoft Corp.'s Multiplan.

The link ensures data integrity through security controls and audit trail capabilities that provide control over who can retrieve data, what data may be retrieved and when it can be accessed, a spokesman said. Uccel is currently offering a 30-day free trial period for Perfect Link and a \$15,000 license fee. Following the special offer, the cost for Perfect Link will range from \$20,000 to \$30,000, depending on mainframe configuration.

Loans management system

In addition to Perfect Link, Uccel announced a consolidated loans management software system — InfoLoans — that combines mortgage, commercial, consumer and dealer floor plans into one package. The real-time, menu-driven system is said to provide full relationship lending for bank customers and total portfolio management for bank managers.

Major features of InfoLoans include on-line collection capabilities, multiple-level and umbrella commitment processing, investor servicing, secondary market support, collateral pricing and control, consolidated statements and billing, charge-off processing and bank management reporting. The package also offers loan servicing functions for tracking indirect liability, escrow accounting, insurance processing, officer call reporting, warehousing and delinquency processing.

InfoLoans is available as a component of Uccel's integrated financial banking system. It is scheduled to be available in the fourth quarter of 1985 at an introductory price of \$360,000. It is designed for the IBM 30 series and larger mainframes.

Uccel is located at Uccel Tower, Exchange Park, Dallas, Texas 75236.

Forte Data product ties IBM micro, host

SAN JOSE, Calif. — Forte Data Systems, Inc. has announced Econnet, a micro-to-mainframe communications product that reportedly allows IBM Personal Computer users to access data and facilities on an IBM host through IBM PC-DOS commands. All functions of Econnet are said to be transparent to the user, including login.

Econnet operates on IBM mainframes with either an IBM MVS 2.2, MVS/SP or VM/SP operating system. Micros are attached to the host via coaxial cable through IBM 3270-type control units. The Personal Computer must be equipped with either of Forte Data's emulator boards, the PC78-2 or the Forte-PJ card, and at

least 256K bytes of memory.

A company spokesman said the initial release of Econnet consists of two elements. Econnet Virtual Peripherals (VTP) offers a virtual hard disk approach that provides the user with up to 32M bytes of predefined on-line storage on the mainframe. Econnet VP also provides the user with access to host printer capabilities.

In the guise of locally stored files

The second element of Econnet, the Cross System Link, permits mainframe data files to be called from the micro as if they were locally stored files. The component differs from VP in that a user can access any stan-

dard operating system file on the host within limits defined by MHS. Mainframe file access or transfer is accomplished by using the PC-DOS copy command followed by the name of the host file.

The VP portion of Econnet is currently available and the Cross System Link is scheduled to be available in the first quarter of next year. Pricing for Econnet includes an \$8,000 initial license fee plus a \$500 monthly license for VP and a \$300 monthly license for Cross System Link. The product can also be purchased for \$30,000.

Forte Data Systems is located at 2305 Fortune Drive, San Jose, Calif. 95131.

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SOFTWARE & SERVICES

D&B announces Nomad2 dictionary, interfaces, CBT

Enhanced applications development, accessing capabilities touted

WILTON, Conn. — D&B Computing Services, Inc. has announced a series of products based on its Nomad2 fourth-generation language.

According to a spokesman, the Nomad2 Data Dictionary (\$5,000) is an interactive, menu-driven system that enhances applications development in Nomad2.

Among the product's features are the ability to create schemata for use outside the Nomad2 Data Dictionary, a report builder for simplified ad hoc data analysis, the ability to accommodate descriptions of external files that interface with Nomad2, including IBM's Isam, Vsam, Qsam, SQL and

IMS, and the ability to resolve nested program calling sequences, for up to 64 levels, the spokesman reported.

The company also announced a full-function interface between Nomad2 and IBM's SQL/DS (\$10,000). The interface is said to allow end users to use Nomad2 to describe, maintain and report from an SQL/DS data base.

Among the capabilities the interface offers are complete read and write access to SQL data base tables, forward and backward movement within an SQL/DS table, in-place record deletion or modification using Nomad2 commands and an SQL-to-

Nomad2 conversion feature activated by a simple utility, the spokesman said.

The company also introduced an IBM IMS interface (\$6,000). The spokesman said information in IMS data bases can be accessed by IBM TSO users through the reporting capabilities of Nomad2.

The Nomad2/IMS interface offers report preparation using Nomad2's List command, built-in functions for summing, counting, averaging, totaling and calculating percentages, more than 140 functions for handling statistical and financial reporting requirements and the ability to per-

form "what-if" analyses and consolidations within a single environment, the spokesman said.

Finally, the company announced a computer-based training (CBT) option (for approximately \$15,000) to Nomad2 that reportedly offers end users hands-on instruction in the use of Nomad2. The Nomad2 CBT option runs under both IBM's VM and MVS operating systems and allows end-user access either through standard terminals or through an IBM Personal Computer.

D&B Computing Services is located at 187 Danbury Road, Wilton, Conn. 06897.

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D A S
DATA ACCESS SYSTEMS, INC.

Geisco adds WPXchange to Quik-Comm

ROCKVILLE, Md. — General Electric Information Systems Co. (Geisco) has announced WPXchange, an information storage, retrieval and translation capability that reportedly allows dissimilar word processors and personal computers to exchange documents.

The service is offered as part of Geisco's Quik-Comm teleprocessing network.

The software is initially available for Wang Laboratories, Inc. VS and OS systems and for IBM Displaywriters and IBM Personal Computers running Multimate International Corp.'s Multimate word processing software.

WPXchange has a global document storage and retrieval capability, a document translation capability and a link to Quik-Comm's electronic mailbox service. When connected with Geisco's worldwide network, documents can be stored, retrieved and exchanged between dissimilar equipment, said Duane E. Pengov, general manager of GE's Office Communications Operation.

Geisco will also make the Quik-Comm network accessible to telex users in December.

A WPXchange user would pay \$1.50 to transmit the first page of 1,000 to 3,000 characters with a translation charge of 50 cents and \$1 for additional copies.

Geisco is located at 401 N. Washington St., Rockville, Md. 20850.

SYSTEMS SOFTWARE

JOINER ASSOCIATES, INC.
Just Version 1.1

Joiner Associates, Inc. has released Version 1.1 of its networking software product, Jnet, which allows users of Digital Equipment Corp.'s VAX-11 machines running under DEC's VMS operating system to exchange files, electronic mail and real-time messages with IBM's VM/CMS operating system users.

Version 1.1 works with DEC's Decnet local- and wide-area network and

SOFTWARE & SERVICES

Continued from page 88

tem/35 libraries from within a program. Source and procedure number read/write functions are said to be supported.

The modification level of the program is immediately available and carries a one-time license charge of \$385.

Current licensees pay only a mailing and handling fee, the vendor said.

System Support Products, 7630 Arden St., Annandale, Va. 22003.

CORNERSTONE SOFTWARE SYSTEMS Disaquick/32

Cornerstone Software Systems has announced Disaquick/32 software, a series of enhancements for the file managers in Perkin-Elmer Corp.'s 32-bit superminicomputers running under PE's OS/32 operating system. The product is compatible with PE's current R07-02 revision of OS/32.

Disaquick/32 is said to

eliminate overhead and wait states in the file managers. System performance becomes a function of the speed of the processor, rather than a function of disk access time, according to a spokesman. The product reportedly eliminates unallocated disk space.

Pricing of Disaquick/32 range from \$2,000 to \$7,000, depending on the processor.

Cornerstone Software Systems, 200 Box 143, Marysville, Pa. 15663.

SOUTHERN SYSTEMS, INC.

Mercurion Printer Management Facility

Southern Systems, Inc. has announced the Mercurion Printer Management Facility (MPMF) graphics software module. MPMF was designed for use with a forms overlay buffer on the Mercurion 1 electronic printer, which prints at the rate of 60 page/min.

MPMF is said to allow us-

ers to create and store output forms, then call them up for printing as part of a typical applications output. Users can create a form using a range of alphanumeric settings, varying densities of lines and shading and graphics including logos and signatures, the vendor said.

The price of MPMF is \$5,000, and the support charge is \$200/mo, the company said. The price for the Mercurion 1 printer is \$69,950.

Southern Systems, 2841 Cypress Creek Road, Fort Lauderdale, Fla. 33309.

PRODUCTIVITY AIDS

DBMS, INC. DL1/Online

DBMS, Inc. has announced DL1/Online, a full screen, interactive productivity aid for users of IBM's IMS.

A spokeswoman said DL1/Online allows users to access an IMS data base, view its contents and structure and create, fix, modify, add and delete information on-line.

The package is said to support IMS DL1 commands, and it reportedly reduces the need for users to work within the confines of batch processing or to write special, single-purpose programs to access and manipulate IMS segment data.

For application development, DL1/Online can verify data base calls and test search strategies, the spokeswoman said.

DL1/Online reportedly features overlay data in either hexadecimal or character portions of the screen, the capability to scroll through segments by line or page with single-key commands and the ability to equate lengthy segment search arguments with symbolic labels to eliminate keystrokes.

DL1/Online runs with IBM's IMS/VS under CICS or TSO and with DOS/VS under CICS. It may be licensed for \$5,900.

DBMS, 1801 N. 4th St., Naperville, Ill. 60540.

See AD86 page 92

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SOFTWARE & SERVICES

AIDS from page 90**GT SOFTWARE, INC.**
BMS/GT Release 4.8

GT Software, Inc. has announced the availability of Release 4.8 of BMS/GT, its screen generator for IBM 3270 terminals running under IBM's CICS.

A Help screen processor/tutorial and an IBM Development Management System (DMS) conversion aid have been added to the package. According to the company, Tutor/GT is a tutorial facility for any new or existing application. It reportedly can be implemented without any changes to existing programs.

The DMS conversion aid is said to allow an installation to convert DMS panels to standard BMS screens.

BMS/GT is compatible with any release of CICS 1.4 or higher. The base permanent license for the BMS/GT is \$5,500 for IBM's VSE and \$6,900 for IBM VS/1 and MVS operating systems.

GT Software, 4411 E. Jones Bridge Road, Norcross, Ga. 30092.

**APPLICATION
PACKAGES****ISSCO, INC.**
Iviss Megacalc

Iasco, Inc. has announced the addition of the Mega Group, Inc.'s Megacalc mainframe spreadsheet to its Iviss visual information system software. Megacalc can also accept microcomputer spreadsheets uploaded

from Lotus Development Corp.'s 1-2-3, Software Arts, Inc.'s VisiCalc and Computer Associates, Inc.'s SuperCalc.

According to a spokesman, Megacalc will also be linked to Iasco's Tei-A-Graf graphics software. Both Iviss and Tei-A-Graf use IBM 3270-type terminals under IBM's MVS/TSO and VM/CMS.

With the addition of Megacalc, users of Iviss will be able to calculate and model data in spreadsheet format and communicate the data in graphics form, upload entire micro spreadsheet models to the mainframe, combine spreadsheets from various micros and move data from the mainframe to the micro via Iasco's Data Connection software.

Megacalc is currently available at prices ranging from \$19,000 to \$24,000. Links to Iasco software are

set to be available early next year.

Iasco, 10505 Sorrenna Valley Road, San Diego, Calif. 92121.

RATH & STRONG, INC.
CSD/AML

Rath & Strong, Inc. has announced a computer-aided process planning package for industrial and process engineers to develop, compute, document and maintain production operator job standards. The package runs on IBM 30 series mainframes under IBM's OS/MVS operating system and on IBM 4300s under DOS.

Both mainframe versions run under IBM's CICS with Veam files and Cullinet Software, Inc.'s IDMB3 data base and data communications environment. It also operates on any Data General Corp. minicomputer under XT's Rdos and AOS operating systems and on any microcomputer under Microsoft Corp.'s MS-DOS or IBM's PC-DOS operating systems.

The Computerized Standard Data/Advanced Machining Logic (CSD/AML) package finds the combination of feed and speed that will produce the required finish and make full use of the horsepower available on the user's lathes, mills, drills, grinders and gear cutters, a spokesman said. CSD/AML considers the material and finish of the workpiece, setup rigidity, tool geometry and material, interrupted cut, eccentric weight, steady rest, coolant, hand feeding, machine condition, horsepower and actual available speeds and feeds.

The price of the mainframe or minicomputer versions is \$60,000; the microcomputer version is \$30,000. Source code, consulting and technical assistance are included.

Rath & Strong, 21 Worthen Road, Lexington, Mass. 02173.

**LELAND COMPUTER
SERVICES, INC.**
Leland Purchasing Control System

Leland Computer Services, Inc. has announced the Leland Purchasing Control System (LPCS) for IBM mainframes.

According to a spokesman, LPCS is an on-line, interactive purchasing system that allows a purchase order to be created using only three transactions. The system pulls standard input data from its data base whenever possible, eliminating the need to input redundant information.

Any purchase order can be amended, even after closing, and LPCS maintains a historic audit trail of all user changes. It can be tailored to work with any materials requirements planning data base. It is written in command-level IBM CICS, utilizes IBM's DL/I and processes in IBM's OS and DOS environments. LPCS is priced at \$22,500.

Leland Computer Services, Suite 144, 8601 Dunwoody Place, Atlanta, Ga. 30333.

**CANTON AUTOMATED
SYSTEMS, INC.**
On-Line Loan Service Card

Canton Automated Systems, Inc. has developed an automated loan service for financial institutions using the IBM 370, 4300 and 30 series mainframes.

The On-Line Loan Service Card reportedly runs with IBM's DOS/VSE operating systems, IBM's CICS/VSE

Continued on page 94

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SOFTWARE & SERVICES

Continued from page 93
 Viam or Beam and Viam files. It provides a central location for all loan service data, including service comments and follow-up notes.
 Base price is \$28,000.

Canton Automated Systems, 100 Central Plaza S., Canton, Ohio 44701.

PALETTE SYSTEMS, INC.
 Palette Cadd software for Vastation I

Palette Systems, Inc. has

announced that its Palette Computer-Aided Drafting and Design (Cadd) software now supports Digital Equipment Corp.'s stand-alone graphics workstation, the Vastation I, under DEC's MicroVMS operating system.

While viewing, drawing and modifying Palette files, the user can simultaneously plot a drawing or display a directory of drawings stored on disk. Palette provides an interface to DEC's LA60 and LA100 dot matrix printers.

The price for the Palette system is \$9,900 for the two-dimensional module and an additional \$2,500 for an optional three-dimensional module. An independent program interface costs \$2,000.

Palette Systems, Two Burlington Woods Park, Burlington, Mass. 01903.

COLLIER-JACKSON, INC.
 Cj/Advanced General Ledger update

Collier-Jackson, Inc. has

announced that its Cj/Advanced General Ledger package now includes an updated allocation feature that is said to give users a choice of capabilities.

According to the company, the system, which is designed for Hewlett-Packard Co.'s HP 3000 minicomputers and Digital Equipment Corp.'s VAX-11 series, can automatically allocate a sales tax expense for a department's percentage of the gross sales.

The time period can be determined by the customer.

A customer-defined processing sequence reportedly allows Cj/Advanced General Ledger allocation according to a previous allocation procedure.

An \$18,000 license fee for the product includes object code, source code, on-site training, installation, user documentation, implementation plan, a 90-day start-up warranty and support.

Collier-Jackson, 8707 W. Cherry St., Tampa, Fla. 33607.

BURROUGHS CORP.
 Burroughs Distribution Partner

Burroughs Corp. has announced a software distribution system for use on Burroughs B1000, B6000, B6000 and B7000 series mainframes.

Burroughs Distribution Partner is developed with the Line language. According to the company, the package incorporates on-line documentation as well as Help screens.

The Base Module, which includes order entry, inventory control, accounts receivable, inquiry and management reporting, is available immediately for \$22,500.

Burroughs, Burroughs Place, Detroit, Mich. 48232

MANCHESTER SYSTEMS GROUP, INC.
 Manchester Reinsurance System CICS version

Manchester Systems Group, Inc. has announced an IBM CICS version of its Manchester Reinsurance System (MRS).

The CICS version is an on-line, interactive reinsurance processing system designed to meet the functional requirements of professional reinsurers, intermediaries and the reinsurance departments of primary companies.

It tracks reinsurance from the initial offering through binding to accounting, claims and retrocessions. MRS processes all forms of domestic and international reinsurance.

According to the company, prices range from \$282,660 for the basic reinsurance assumed without submissions to \$468,750 for the fully enhanced version. (All options come with participant-level retrocession.)

Manchester Systems Group, 88, 895 South Blvd. Ave., New York, N.Y. 10290.

GRIER SONTAG ASSOCIATES, INC.
 Invest II for HP 3000 series

Grier Sontag Associates, Inc. has announced that modules of its Invest II financial portfolio management system will run on Hewlett-Packard Co.'s HP 3000 Series.

Continued on page 97

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Type(s): (Check box) ☐ Displaywriter ☐ PC ☐ D

THE 10 MOST IMPORTANT QUESTIONS YOU SHOULD ASK YOUR SOFTWARE VENDOR



"Many questions you would ask prospective application software vendors don't differentiate one vendor from another. The similarities between suppliers are not what's important — it's the differences that count. Here are ten questions you should ask prospective application software vendors before making your selection."

—John C. Gable,
Vice President of
Corporate Systems and Technology
for American Software, Inc.

	AMERICAN SOFTWARE	OTHERS
1. Can the application software you are considering be easily delivered in a variety of data processing environments (operating system, teleprocessing monitor, and data base) to permit easy migration and allow system software environmental independence?	Yes	?
2. Can the application software be delivered for VSAM and all popular data base management systems, rather than being tied to the application vendor's data base system — one which could be outmoded by new data base products developed by another vendor in this rapidly changing high-technology industry?	Yes	?
3. Is the application software implemented using a "native" or direct approach to the operating system, teleprocessing monitor, and data base manager, without the inefficiency associated with "bridges" or the vendor dependencies of a "black box" approach?	Yes	?
4. Is the application product coded in an efficient, widely-used, and industry-standard language such as COBOL, rather than a vendor-dependent language unknown to the general data processing community?	Yes	?
5. Can the application product be "tailored" or streamlined to meet the specific functional and operational needs of a company through purchase of a basic package and selected optional features, thereby avoiding delivery of useless code?	Yes	?
6. Does the vendor retain a source version of each customer's uniquely tailored application software for emergency backup, problem determination, and client assistance?	Yes	?
7. Does the vendor have a broad, completely integrated line of application software which can be demonstrated on a single system instead of merely described?	Yes	?
8. Have all of the vendor's products been integrated by design and developed by a single organization, thus eliminating the need for inefficient interfaces and unknown "black boxes" to tie together unrelated or acquired applications?	Yes	?
9. Does the vendor clearly demonstrate a full commitment to the complex business of application software, rather than offer an incidental addition to its main product line?	Yes	?
10. Has the vendor been in the application software business a minimum of ten years with a successful track record of sustained profits and a strong financial posture?	Yes	?

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SOFTWARE & SERVICES

TOOLS from page 85

are faced with the tough decision of picking one of the likely survivors.

Let us define a few terms relevant to this discussion. The subject is application generators to be used by programmers to build applications under IBM's IMS/DC and CICS and that access IBM DB/1 data bases. These generators are for pre-defined production systems, which are often built in a development center, but never in an information center.

Let us also avoid the terms fourth- and fifth-generation languages. Rather, we are looking at tools that potentially offer substantial productivity gains over traditional development and maintenance methods.

Last, when we talk of maintenance, we are referring to enhancement and adaptive, but not corrective.

Choosing a Cobol-based tool can be seen as an interim decision that represents a gradual turn in the direction of the high-powered application generators.

maintenance. Enhancement maintenance usually involves adding new functions and adaptive maintenance involves a change in environment. Corrective maintenance usually involves programming errors missed during testing and found late by computer operators.

With the apparent failure of the early application generators to live up to their billing, DP organizations are finding it difficult to commit to a generator for the five- to seven-year life cycle of the developed application. The lack of performance of many generators is also an issue.

If your organization likes the leading-edge image, then being a pioneer in the current market may be appropriate. But, if you don't like being a pioneer, the safest decision may be to select a Cobol-based application generator that you do not have to commit to in the long term. The Cobol-based tools also generally do not have long learning curves.

Choosing a Cobol-based tool can be seen as an interim decision that does not turn your organization sharply in one direction, but represents instead a gradual turn in the direction of the high-powered application generators in today's market.

Most of the Cobol-based application generators come with basic screen and report

painter features to simplify what the user views as inputs and outputs. Most also have a feature to simplify building a skeletal version of a program that delivers data from screen to program and back again. They also include field-edit logic which is usually defined in a nonprocedural fashion soon after the screen is painted.

With screen, reports and skeletal programs ready, you can add procedural logic such as after-edit logic and

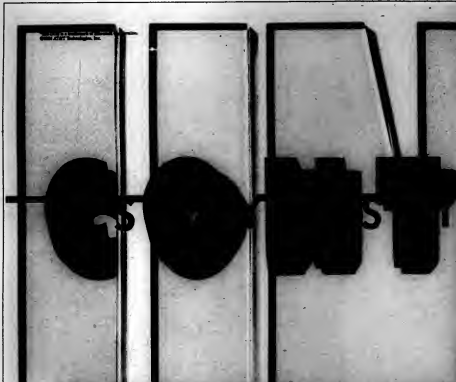
application-specific logic using variations of Cobol that include powerful data base and data communications commands. This procedural logic is then processed through a precompiler and expanded into a complete Cobol program, ready to compile, link and execute. Reasonably complete program documentation is usually generated somewhere within this process as well.

Add to this a complete disconnect of the generated

source code that the application generator creates, and you can also avoid a long-term commitment to the tool and its vendor. The disconnect feature also gives you greater flexibility.

Until the market settles and the next generation of tools is available, a Cobol-based application generator for the IMS DB/DC and CICS/DB/1 environment appears to be the best interim decision for most DP organizations.

Admittedly, the debate over Cobol's future rages on. However, the fact remains that there is a huge base of trained Cobol programmers and plenty of existing and newly developed Cobol systems for them to work on. And, if we can make substantial improvements in productivity and still use Cobol, then maybe we can make an evolutionary, rather than a revolutionary, shift to the next generation of productivity tools.



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SOFTWARE & SERVICES

Selection criteria help in choice of applications generator

Use the following list of considerations to assist in the selection process for Cobol-based applications generators. Each consideration shown may be given a weighting factor — high, medium or low — depending on your organization's requirements:

■ A screen image painter to generate the Message For-

mat Services or Basic Mapping Support source statements. It should be interactive and easy to use when creating or modifying screens.

■ A screen flow painter for screen control and prototyping.

■ Early prototyping feature (for example, soon after

screen design) that allows data to be entered on the screen, not just viewed in a simple simulation.

■ A report image painter for batch reporting requirements.

■ Commands or macros to simplify data base and data communications interfaces.

They should also be modifi-

able for use by senior technicians.

■ An option of a complete and simple disconnect from the applications generator for maintenance of the generated source code.

■ No runtime package that would affect portability to multiple CPUs.

■ A minimal learning curve for programmers who

already know Cobol.

■ Allowance for leveraging of experienced IMS DC, CICS and DL/I developers.

■ No significant design restrictions that limit functionality.

■ Handling of high-volume/highly complex processing efficiently.

■ Acceptance of copybooks from an existing data dictionary.

■ Accommodation of major conversions, enhancements and adaptations of existing systems as well as new development.

■ Handling of complex data bases; for example, logical relationships, secondary indexes, Fast Path and eventually IBM's DB 2.

■ High recommendations from current customers.

■ Ensuring that developers generate standardized Cobol source code that follows structured coding techniques. A precompiler, the actions of which can be adapted to your organization's standards is a help.

■ Generation of systems that may potentially run in both IMS DC and CICS.

■ Ability to use a microcomputer as a programmer workstation for at least some of the development process — for example, screen painting and prototyping.

■ Good documentation.

■ Comes from a stable and responsive vendor.

■ Reasonable initial and recurring costs.

■ Does the tool currently, or will it eventually, offer a migration path for existing systems?

Continued from page 94
ries/37 minicomputer.

The system reportedly can handle all asset categories including options, futures, repurchase agreements, mortgages, fixed income securities and common stock.

The product's performance measurement subsystem is said to provide portfolio analysis and allows the user to select a daily rather than monthly cash weighting. User-defined tables and a report writer enable each firm to customize the system without extensive programming, the vendor said.

The software package for existing Series/37 systems costs \$40,000. Turnkey installations are also available. *Orver Securities Associates, 6 E. 58th St., New York, N.Y. 10017.*



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SOFTWARE & SERVICES

SUBJECT from page 25

spice-off files to hold it all together.

Subject data bases are a way of defining one data structure that can be accessed by all applications. "Subject data bases represent discreet chunks of the data resource," Ross said. "[They have] to be highly integrated, sharable by multiple applications and used as a building block for the entire information architecture."

Subject data bases must be built from the ground up. More important, they have to be thoroughly planned. That up-front planning time can pay back handsomely, Ross said. If well implemented, subject data bases require little modification. Application development and installation time can be speeded dramatically and both CPU and disk space resources saved.

To plan for a subject data base,

you first need to identify the discreet functions of your business. "We're basically looking for seams we can use to cut the data base into pieces," Ross said.

Look at the organization as a user of information and try to identify how data flows through it, he said. If you take that broad, functional view — sometimes called functional decomposition — a matrix will begin to emerge showing how data is used by various operations.

Start building the data base in pieces with a structure that can be accessed by other applications when needed. Your department's application development plan should revolve around your data base plan, Ross said. For example, build two subject data bases while creating an application that uses them. Your next application may require parts of

both data bases plus a new one. If properly structured, you should only have to build the new data base to implement that application.

"When applications need to communicate, they draw from the subject data bases rather than from each other's application data bases," he said. As a result, the code needed for validation, manipulation and editing is also reduced.

Ross conceded that the most difficult aspect of organizing subject data bases may be political. Management is not accustomed to thinking of the company as a user of information and may be reluctant to approve the costs of development. DP managers can start the ball rolling by putting together a project team to analyze information needs and then presenting that, along with suggestions for improvement, to executives.

DATA from page 25

most corporations. For example, the sales department knows its customers by corporation names, billing sees them as invoice numbers and production knows them in terms of the products they order. Thus each operation uses different keyed fields to look at the same data.

In many companies this spidery web of views is held together by tenuous bridges that have been built between the files. In fact, Holland estimated that the average Fortune 500 company has 400 man-years invested in its data base and another 300 man-years sunk in the bridges between the records.

The most important requirement for achieving the promise of distributed data base is standardization.

Compatibility is needed across hardware, data, application systems, networks and systems software, Holland said. "There are standards right now, but manufacturers aren't sticking to them," he said. But he added, "Ultimately the business world will demand them, and they will be achieved." In fact, certain vertical industries like air travel, banking and manufacturing have already defined a certain level of standardization within their companies.

Establish standards

What data processing and corporate management in general can do is establish some standards for how data will be used and then test them. Multiple data base management systems (DBMS) are the wrong way to go, Holland said. Companies like Relational Technology, Inc. and Oracle Corp., which advocate standardizing on a single DBMS (theirs), are heading in the right direction, he said. But they are still attacking only one of the five levels of standardization that needs to be in place.

As the industry gradually moves toward the reality of distributed data base, you can take steps to get a jump on the competition. Holland recommended that you set up pilot projects within the company using standardized software, hardware and local-area networks. Evaluate the alternatives and see which ones are best for you. "The key is for companies to go with one standard and not three or four different ones," he said.

More important, MIS managers have to start thinking more like business people. As trite as that phrase now sounds, the success of distributed data base depends upon your willingness to learn how your company uses data.

Multiple-keyed fields will not be successful in the distributed environment of tomorrow. A personal computing environment that lets a hundred species of dissimilar flowers bloom will fail as well. You will have to lead your business into this new generation with the confidence that your data model is in tune with the company's business model.



"This is not a recording, but I have an excellent memory."

COMMUNICATIONS

Enhancements out for AT&T's high-end PBX

Central processor redesign quadruples capacity, voice mail system debuts

By John W. O'Neil

NEW YORK — AT&T Information Systems has nearly quadrupled the maximum capacity of its high-end private branch exchange and introduced enhanced management capabilities, a voice mail system and higher speed data support for that switch.

Capacity enhancements to the System 86 were achieved by adopting a central processor that uses bipolar and bit-sliced technology, increasing cache and main memory to 32K bytes and 8M bytes, respectively, and using new software, said Bob Magnani, System 86 product manager. Previously limited to 7,000 lines, the ex-

panded version of the switch can now support up to 32,000 standard analog telephones. By interconnecting systems using the company's distributed communications system, up to 100,000 lines can be serviced, AT&T reported.

Voice/data workstation support has been increased from 5,000 to 8,000 devices, and the number of trunks the switch can support has been increased from 1,250 to 6,000. The processor can reportedly handle 48,000 busy-hour calls, whereas its predecessor could support only 20,000, Magnani said. With the Remote Group feature, some of these switches can be clustered at remote locations up to 100 miles

from the central switch.

The enhancements will be made available in the first quarter of 1986 and will cost from \$10,000 to \$50,000, depending on the system configuration.

Also announced was the SPS Application Processor (AP). Based on the AT&T Unix V operating system, this optional attached processor will enable System 86 users to support a variety of applications, the company reported. The initial program for the processor is the Centralized System Management application, which provides switch control and administrative functions. Also compatible with the System 75

See AT&T page 104

Western Union's Easylink service available on-line

NEW YORK — Western Union Corp. recently announced enhancements to its Easylink electronic communications service that include an on-line communications capability, a session control feature and a digital paging system.

The on-line capability reportedly will provide users with direct communications with other users and with the Western Union Telex system.

Online Conversation is said to give users the capability to converse directly on screen with another Easylink user if the addressee has an autonomous terminal registered with Easylink, regardless of the brand of terminal. Messages can be sent from personal computers, word processors and terminals to the 1.5 million Telex system machines worldwide.

Session Control is a service enhancement that reportedly provides access to all Easylink services with a single telephone call and sign-on procedure, eliminating the need to redial when users want to switch services. Session Control reportedly provides a menu of options, including Easy-

See LINK page 104

MCI's Datanet packet-switching service to make debut at Calif.-based bank

By James Connolly O'Neil

NEW YORK — Security Pacific Corp. and MCI Communications Corp. recently announced here that Security Pacific National Bank will be the first user of MCI's Datanet packet-switching service.

The Security Pacific Automation Network (SPAN) will provide the Los Angeles-based bank with packet-switched financial data services in 110 markets containing 85% of the U.S. population and eventually will be expanded worldwide, according to the bank and MCI.

"SPAN gives Security Pacific the capability to be the low-cost provider of specialized financial services to the customers of our \$42 billion diversified corporation," said DuWayne J. Peterson, chairman of Security Pacific Automation Co.

The customized network is being tested now and will be commercially operational in January.

It will link the bank and its correspondent banks, corporate and individual customers, 1,100 consumer and commercial finance offices, mortgage banking offices and wholesale and retail securities offices.

Early applications will be automobile loan financing; point-of-sale; On-Line Advantage, a personal computer network for discount brokers; and Specifics, the bank's on-line cash management and treasury workstation.

"SPAN is the first of what we anticipate will be many corporate networks providing financial services," said J. Robert Harcharik, president, MCI Digital Information Services Corp.

meeting the internal data communications needs of corporations," said MCI Digital Information Services Corp. President J. Robert Harcharik.

He said Datanet allows a large user, such as Security Pacific National Bank, to tailor the value-added facilities and services of a public packet-switching network to its own needs.

Electronic mail revenue seen doubling annually through 1988

NEW YORK — Revenue from electronic mail services will soar by an annual average of over 100% through 1988, according to a report by Link Resources Corp., a market research firm based here that studies electronic media.

"Overall electronic mail services revenue will grow from \$80 million at [the end of] 1983 to more than \$2.1 billion in 1988. This represents an exponential average annual growth rate of 107%," according to the study, titled "Electronic Mail Services."

Computer-based messaging services that offer terminal-to-terminal messaging will be more successful in the long term, but mixed mode services that offer terminal-to-terminal and facsimile transmission will be spectacularly successful over the five-year forecast period, according to the Link study.

Trends opening growth

The mixed mode services are a \$21 million market in 1984, but will jump to \$800 million in annual

revenue in 1988, according to Link.

Link cited a series of trends that will spur the growth of electronic mail, including the following:

■ New hardware and software to accommodate the proliferation of microcomputers via easy-to-use communications software packages.

■ Customized pricing to offer the best mix for large users and transactional pricing to give users a sense of start-and-finish use, instead of open-ended use of time-sharing.

■ Expected approval before the end of 1984 of the CCITT-recommended Series X.400 interface protocols to reduce equipment compatibility problems.

■ Marketing of customized messaging applications that are part of specific organizational processes rather than a substitute for the telephone message or memorandum.

■ The growth of communities of users with services for small businesses and consumer users and closed users group services for people of common interest, such as lawyers.

The report noted that new categories of electronic mail vendors have developed to challenge the traditional providers, which are computer time-sharing firms and value-added network operators, service bureaus that provide interactive compatibility between different vendors.

New providers

New types of providers include vendors that are becoming more communications-oriented; independent software houses; and mass market voice and record carriers, including MCI Communications Corp., Western Union Corp., Federal Express Corp. and AT&T, Link said.

Link reported that some of the growth will be at the expense of existing telex systems, whose cost, speed and character set limitations make them unsatisfactory for time-sensitive business communications.

More information on the study is available from Link, which is located at 216 Park Ave. S., New York, N.Y. 10003.

■ A network executive outlines three approaches companies can take when installing local-area networks, 100

■ Comshare, Inc. has unveiled an integrated modern option for its line of statistical multiplexers, 101

■ Network Systems Corp. has announced three interfaces to attach low to medium-speed asynchronous peripherals to its Hyperbus local-area network, 102

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COMMUNICATIONS

Single-vendor local-area nets seen topping OA mart

By Kathleen Burton
CW West Coast Bureau

SAN FRANCISCO — General-purpose local-area networks will dominate the office automation market by the year 1990, according to Ralph Ungermann, president and cofounder of Ungermann-Dass, Inc.

Addressing an audience of analysts, investment bankers, OEM marketing managers and financial planners here, Ungermann said companies can take three approaches when installing local-area networks — use a single-vendor turnkey system, interconnect proprietary products from different vendors or use a general-purpose local-area network from a single vendor.

The last method is becoming most prevalent because proprietary local-area networks lock users into a single vendor over long periods of time, and using systems from different vendors poses integration problems because gateways between networks do not exist yet. IBM's token-ring product, for example, is still two to three years away, he said.

Ungermann, whose firm manufactures local-area networks, said optical fiber clearly will dominate the media over the long term.

Although optical fiber is not currently as cost-effective as coaxial cable because of the high cost of equipment like connectors and splicers, costs will plummet in the next several

years, he predicted.

New York-based Fiber Track is already selling time on fiber-optic circuits for 6 cent/circuit (per minute/ per month), while 10 years ago it cost \$1/min, he said. IBM will use optical fiber in its token-ring strategy, Ungermann predicted.

Applications software will drive the local-area network market in 1985, Ungermann said. He predicted a trend toward server and application-specific software, distributed databases and distributed word processing programs that are able to move files from mainframes to personal computers. Such software will let personal computer users describe what is needed from the mainframe,

provide data security and transpose information into the proper format.

With the emerging software, about half the system's intelligence (diagnostics, for example) will reside on the network, and the remainder (such as data bases and formal converters) will reside on the host and attached devices, Ungermann added.

In order for local-area networks to become more prevalent in medium to large businesses, applications software must resolve incompatibility issues, local-area network companies must focus on meeting future demands for high-bandwidth capacity, and local-area networks must be restructured so that multivendor systems are always available on a network, Ungermann said.

A local-area network standard will not emerge in this century, Ungermann predicted, because vendors — protective of their installed bases — do not want a single standard. The advantages to standards are lower costs, low risk of product obsolescence and product compatibility.

In the Japanese and European markets, Ungermann said, separate standards are developing. The Japanese are rallying behind Ethernet because they do not want IBM to dominate their market, and Europe is leaning toward International Standards Organization standards.

General-purpose, standardized local-area networks in factory automation will be one of the fastest growing market segments through the end of the decade, growing from less than \$80 million now to \$1 billion by 1990, he predicted.

NOT ALL IBM 3270 USERS ARE WASTING FORMS.

THE ISI 487 CONSERVES.

Not long ago, all IBM 3270 users were treated alike. Anyone that needed immediate access to a printed form was forced to waste a form for each form removed. Simple tasks turned into costly and frustrating procedures on the IBM 3287 printer.

Then the ISI 487 arrived. With tractors tucked neatly away and a tear-off scale positioned conveniently up front, the ISI 487 allows users to tear-off forms right after printing without any waste. Designed to fulfill any application, the ISI 487 handles continuous forms or single sheets and delivers dot matrix, near-letter quality, and incredibly sharp large character label printing.

The ISI 487 has satisfied a variety of IBM 3270 users. Isn't it time you joined them? This plug-compatible replacement for the IBM 3287 carries a price tag as low as \$3,350 and belongs anywhere forms are dispensed immediately after printing. Hospitals, insurance companies, manufacturers, and ticket outlets — put an end to unnecessary waste!

For more information about the ISI 487 and our other IBM compatible (fully integrated, no box!) printers, like the ISI 736 letter quality printer with twin sheet feeder, call, write, or TWX us today!



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TWX: 810-223-6058

VOICE/DATA COMMUNICATIONS

VOICEMAIL INTERNATIONAL, INC.

Version 3 Voicemail

Message redirect, multilevel prompting, password security and reverse messages are among the enhancements announced in Version 2 of the Voicemail voice message storage and retrieval system from Voicemail International, Inc.

In addition to 11 enhancement features, Voicemail has added six new voice mailbox options including a two-way communications box that allows a user to correspond with a specific individual or group without requiring the other user to learn system commands. Also added were a drop box, a single box or group of boxes with a single-message life for commercial applications. According to the company, once the single message is received, the box is no longer valid.

The Voicemail system reportedly does not require private branch exchange (PBX) supervision, although it can be integrated with PBXs and Centrex. According to the company, multi-tier design allows for expansion from an eight-port to a 64-port system with up to 207 hours of storage.

According to the vendor, Version 2 is free to current customers. A standard eight-port Voicemail package sells for \$125,995.

VoiceMail International, Building 48, 3350 Scott Blvd., Santa Clara, Calif. 95051.

PROTOCOL CONVERTERS

INNOVATIVE ELECTRONICS, INC. MC 90/900

Innovative Electronics, Inc. has announced a protocol converter that is said to allow any personal computer or Ascl terminal to access IBM mainframe environments and Ascl hosts concurrently in either local or remote configurations.

The MC 90/900 reportedly is a microprocessor-based, stand-alone unit that lets Ascl terminals and personal computers appear as IBM 3278 display stations. It connects directly to an IBM 3274/76 cluster controller or to the display/printer adapter of the IBM 4331 by coaxial cable. It is said to support bi-synchronous or Systems Network Architecture/Synchronous Data Link Control communications.

An auxiliary RS-232 port allows an attached personal computer or Ascl terminal to have simultaneous pass-through access to an asynchronous minicomputer or public data base without requiring the user to log off the active IBM host session.

The MC 90/900 costs \$1,095.
Innovative Electronics, 4714 N.W.
165th St., Miami, Fla. 33014.

SOFTWARE

CLEO SOFTWARE 3780Plus

Cleo Software has announced 3780Plus for high-speed computer-to-computer file transfer for the IBM Personal Computer, Hewlett-Packard Co.'s HP 150 microcomputer and AT&T's 382 and 386 minicomputers.

The product is said to support IBM 3780 and 3780 binary synchronous protocols and to transfer at up to 19.2K bit/sec. As a 3780 emulator, 3780Plus is said to offer transparent mode, space compression, device selection, printer format control, spooling, configurable line parameters and line trace for diagnostics.

Prices range from \$500 to \$1,400.
Cleo Software, 461 N. Mulford
Road, Rockford, IL 61107.

LEGIST AUTOMATION, INC. Step/TV

Legist Automation, Inc. has introduced a software package that allows the IBM Personal Computer to access Motorola, Inc./Four-Phase Systems, Inc. Series IV office automation systems.

Specific Terminal Emulation Program/Series IV (Step/TV) is said to allow IBM Personal Computers and compatibles with asynchronous connections at any line speed from 300 bit/sec to 9.6K bit/sec, to operate as if they were locally attached terminals on the Series IV running under Four-Phase MPE operating system.

The personal computers reportedly can use any of the programs running on the Series IV, including Four-Phase Foreword word processing and Vision data entry and processing and graphics, Cobol or Legist's Then-If spreadsheet.

The product also supports networking of Series IV processors, allowing the inbound personal computer user to go through the nearest Series IV and attach to an application

running on another Series IV using either asynchronous or bi-synchronous communications.

The component running on the Four-Phase host costs \$3,500; the networking option, \$1,500; and the first copy of the personal computer component, \$160. The package will be available in January.

Legist Automation, Suite 6, 2314
Michigan Ave., Arlington, Texas
76013.

MULTIPLEXERS/ MODEMS

COMDESIGN, INC. IM-4800, IM-6000 modems; TX-700; TX-600

Comdesign, Inc. has introduced ad-

vanced integrated modems as an option for its line of statistical multiplexers. Also announced was a microprocessor-based assembler/disassembler and a switching statistical multiplexer.

The Integral Modems (IM) series products are said to be compatible with CCITT recommendations V.27 or V.29. According to the vendor, the IM-4800 and IM-6000 operate full-duplex, point-to-point over four-wire, unconditioned private lines.

Front panel touch-key controls or optional executive port supervisory channels reportedly let configuration monitoring and diagnostic functions be performed through the intelligent networking device. Primary operating speeds are 9,600 bit/sec (V.29) and 4,800 bit/sec (V.27). Pricing is \$2,595 and \$1,795 respectively.

The TX-700 assembles data in

packets via a packet-switching network and disassembles the packets at the receiving end. All TX-700 programming can be performed from a standard terminal connected to the system's supervisory port. Pricing starts at \$2,600.

The TS-600 reportedly multiplexes up to 32 remote devices onto a single link at speeds up to 19,200 bit/sec and provides channel switching and port connection capabilities.

The price is \$3,100 for an eight-channel unit.

Comdesign, 751 S. Kellogg Ave.,
Coletta, Calif. 93117.

MULTI-TECH SYSTEMS, INC. MT254AD

Multi-Tech Systems, Inc. has introduced MT254AD, a modem that oper-

Continued on page 195

The UNIMUX 832 provides 128 ports of fiberoptic firepower for total systems solutions in voice management, data processing, and office and factory automation. The UNIMUX 832 is a universal time division multiplexer so multidisciplinary, it has solutions looking for problems to solve. For limited-distance multiplexing in large data centers, or high density LAN nodes where bulk hauling of voice and data presents major problems, the UNIMUX 832 offers more ports-per-system, higher data transmission, and fully independent ports. Your needs are met for easy integration, complete network flexibility, and cost-effective expansion.

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for you.

COMMUNICATIONS

Continued from page 101
ates at speeds of 300, 1,200 or 2,400 bit/sec.

The product can store up to six 37-digit telephone numbers and can detect busy signals and dial tones, according to the vendor. The modem reportedly operates in either synchronous or asynchronous modes and can be connected to either dial-up or dedicated telephone lines. The product's commands allow the unit to redial a busy number until there is a connection or dial a second number, the vendor said.

MT234AD is compatible with Hayes Microcomputer Products, Inc.'s Smartmodem 1200 and is able to run communications software written for the Hayes product.

MT234AD costs \$440.
Multi-Tech Systems, 62 Second
Ave. S.E., New Brighton, Minn. 55112.

CODE-A-PHONE CORP.

Tel-A-Modem

Code-A-Phone Corp. has announced Tel-A-Modem, an intelligent modem that is integrated into a two-line telephone.

Tel-A-Modem reportedly combines a full-featured key telephone with an intelligent command modem device that provides simultaneous voice and data communications. The modem provides audio and visual status indicators, automatic redialing of a last number, nine-number memory automatic dialer and volume controls for ring signals and line monitors, according to the vendor.

Tel-A-Modem features tone or pulse dialing and transmission speeds of 300 or 1,200 bit/sec.

Tel-A-Modem costs \$695.95.
Code-A-Phone, P.O. Box 5656,
Portland, Ore. 97226.

THEALL ENGINEERING CO.

Modemphone

Theall Engineering Co. has introduced a full-duplex modem and memory redial telephone in a desktop housing.

The Modemphone is said to contain an asynchronous, 300 bit/sec, full-duplex AT&T 103-compatible modem with an RS-232 port. The product reportedly uses large-scale integration design and has LED indicators for data carrier detect, receive data and transmit data signals. It was designed for either Touch-Tone or pulse dialing with a 16-number redial capacity. Prices start at \$110.

Theall Engineering, P.O. Box 336,
Oxford, Pa. 19363.

LOCAL-AREA
NETWORKSBRIDGE COMMUNICATIONS,
INC.

CS/1 server

Bridge Communications, Inc. has announced an Ethernet local-area network terminal server that implements the Transmission Control Protocol/Internet Protocol (TCP/IP) network protocols.

The CS/1 server with TCP/IP software performs the function of a terminal or host server, allowing up to 32 asynchronous devices to access host computers that support TCP/IP and are attached to an Ethernet local-area network. The protocols have been standardized by the U.S. De-

partment of Defense and are a standard part of the AT&T Unix 4.2 bulk storage device operating system.

When attached to Ethernet, the CS/1 reportedly is needed only on the terminal side of the terminal-to-host switch. Asynchronous devices can be connected via Ethernet to host computers that do not support TCP/IP by using CS/1 units running TCP/IP software on both the terminal and host sides of the network, the vendor said.

The CS/1 with TCP/IP is available for \$8,900 with eight serial ports; additional eight-port expansion boards for up to 32 ports are \$1,900 each. A one-year TCP/IP license is \$250, and the software comes on a 5¼-in. diskette.

Bridge Communications, 1345
Shorebird Way, Mountain View,
Calif. 94043.

NETWORK SYSTEMS CORP.
Hyperbus interfaces

Network Systems Corp. has announced three interfaces to attach low- to medium-speed asynchronous RS-232 peripherals to its Hyperbus local-area network.

The Models B113, B114 and B116 are said to support four, eight and 16 ports, respectively, at a simultaneous 9.6K bit/sec per port transmission speed.

Hyperbus is a baseband coaxial system using carrier-sense multiple access/collision avoidance contention.

According to the vendor, the B116 costs \$292.50 per port and provides more capabilities than units in the \$360-\$650 price range.

Network Systems, 7600 Boons
Ave., Minneapolis, Minn. 55428.

TEST EQUIPMENT

INFINET, INC.

NIS 90/80; E285-22 Network Control System

Infinet, Inc. has announced a series of network management, control and performance measurement products integrated into a single data base.

The NIS 90/80 decision support system is based on a Digital Equipment Corp. VAX-11/730 processor running AT&T Unix. According to the vendor, the system has user-definable screen formats, open architecture and a report generator.

The 90/80 reportedly has 456M bytes of fixed Winchester disk storage, a streaming tape drive and support for 16 terminal devices.

Toward Clearer Communications:

InteCom discus



The NIS 90/60 works with the PMS-II, a performance measurement system that monitors network performance and protocol-regulated parameters. Cost of the system is \$150,000.

Infinet also announced an upgrade from its EMS-I product, the EMS-II Network Control System that reportedly allows users to monitor, test and control both digital and analog lines and devices from one console. According to the company, the unit provides advanced analog parameter measurements, such as phase jitter, signal-to-noise ratio and received-signal level. Line quality is measured by generating a 1,003-Hz tone, the company said.

Modem speeds and multiplex channels can be reconfigured from a central-site EMS console. The console is menu-driven and has color-coded

function keys.

The system, which can be integrated into the data base or used separately, sells for \$10,500. Price includes the microcomputer system, operating console and printer.

Infinet, 8 Shattuck Road, Andover, Mass. 01810.

AUXILIARY EQUIPMENT

RACAL-MILGO, INC. Datascraper II Model 1027

Racal-Milgo, Inc. has announced an encryption device said to protect sensitive unclassified government data and to meet Federal Standard 1027.

Datascraper II Model 1027 implements the U.S. National Bureau of

Standards' Data Encryption Standard algorithm, according to the vendor.

The encryptor/decryptor reportedly operates with protocol transparency at data rates up to 5,600 bit/sec. synchronously or asynchronously, in full or half duplex modes and on leased or dial-up lines.

It operates in conjunction with an accessory key writer, which enters cryptographic key values. The unit features self-test and operator-test diagnostics.

Available now, it costs \$2,800. *Racal-Milgo, 6000 N.W. 41st St., Miami, Fla. 33166.*

BLACK BEAR ELECTRONICS, INC.

DLV11-J Distribution Panel

Black Bear Electronics, Inc. has

announced a distribution panel that is said to facilitate the changing of speeds supported by Digital Equipment Corp. DLV11-J asynchronous boards as used in DEC PDP-11 mini-computers.

The DLV11-J Distribution Panel has a 40-pin flat ribbon cable connecting it to the PDP-11 Q-bus and four eight-position dip switches that allow the user to select speeds from 300 to 5,600 bit/sec.

Modular connectors across the top reportedly allow the user to attach a Black Bear modular distribution system using RJ-11 cables. It also is said to feature surge protection on transmit and receive lines, five RJ-11 female jacks for distribution and 30 insulation displacement terminals designed to solve the problem of interconnecting discrete wires.

It costs \$60.95 with a speed regulator and \$225 with one.

Black Bear Electronics, 2801 Santa Monica Blvd., Santa Monica, Calif. 90404.

AMERICAN PHOTONICS, INC.

AFPS270

American Photonics, Inc. has announced a fiber-optic interface designed to convert data from RG62U cables for fiber-optic cable.

The AFPS270 was designed to screw into IBM 3270 series multiplexers, including the 3M Corp. 6600 multiplexer and the Astrocom Corp. 3274 Duplexplexer. It is said to be a transparent link that converts data between two IBM terminal multiplexers from RG62U cable to fiber optic.

It reportedly can be rack-mounted or supplied in a tabletop model.

A unit designed to handle up to 32 terminals costs \$1,850. They are available six weeks after receipt of order.

American Photonics, 71 Commerce Drive, Brookfield Center, Conn. 06030.

ITT DIALCOM, INC.

Xmail

ITT Dialcom, Inc. has announced an electronic service said to provide a direct connection between its electronic mail system and the worldwide telex and telegram network.

Xmail enables Dialcom users to send and receive messages on personal computers, word processors or terminals. Xmail links those users to about 200,000 public telex terminals in the U.S. and more than 1.5 million terminals overseas. Messages can also be sent simultaneously to other Dialcom electronic mailboxes.

One of Xmail's benefits is said to be that it eliminates the need for a special telex terminal. A telex message can be sent using a personal computer and a telephone. Another feature is Xmail's ability to transmit the same message to as many as 500 addressees simultaneously.

Xmail's price includes Dialcom's normal hourly rate of \$16.50 to \$20.00 during prime business hours and \$16.50 at off-peak times, plus the telex transmission rates.

ITT Dialcom, 1109 Spring St., Silver Spring, Md. 20910.

TELEPROCESSING PRODUCTS, INC.

TP-411

Teleprocessing Products, Inc. has introduced a network-compatible

Continued on page 104

ses voice/data integration.

The manufacturer of the first integrated voice/data switching system considers the issues.

Data is a major factor in office communications. It's projected that within the next five years, data transmission will increase from the present 2% to 40% of total PBX traffic. That's explosive growth. And it means that companies must accommodate this increase by expanding their present systems or by planning now to replace obsolete systems with ones that can meet those needs.

A look at alternatives.

To keep pace with this change, an organization has two basic choices. First, it can stay with a limited voice-only PBX and create separate data networks. This, however, is a costly inefficient method, and it becomes increasingly difficult to manage multiple expanding systems.

The second alternative is an integrated voice/data system. By installing one network, a company can have voice and data capabilities at very outlay.

Key benefits are the sharing of resources—devices and software—and consolidated network management. An integrated system is an investment in the future that can pay for itself in the savings of single network administration.

A definition of terms. Integrated voice/data is sometimes thought of as simply combining voice and data in one switch. But it's really much more. It's the total integration of voice and data through a twisted pair network.

Because a digital system does not distinguish between voice and data, both look the same as they pass through the switch. So it's possible to apply sophisticated voice features to data—least cost routing, conference calls between workstations, callbacks on data terminals and other aids to productivity that are normally associated with voice-only systems.

Major considerations.

Universal Connectivity

One of the greatest challenges facing communications professionals today is the management of changing technology. In an environment where many approaches to office communications call for complete flexibility, only a system designed to be compatible with multi-vendor equipment is a safe choice. Such a system provides the format and protocol conversion capabilities for dissimilar devices to communicate with each other, freeing a company from the need to choose all its equipment from one vendor.

A system should be capable of connecting numerous dissimilar devices to a common network, allowing them to share peripherals, data and functions. This flexible connectivity also protects your investment in equipment, ensuring its continuing value.

Non-Blocking Traffic

In voice systems, many calls can share one path through the switch because conversations are short and not everyone uses his telephone at the same time. However in data communications each device needs full access through the switch, and the long holding times of data calls place heavy demands on a network. As more data circuits are added to meet growing user needs, a system founded on voice-only design can't handle the traffic and begins to block calls from completion, or to degrade the quality of transmission.

Non-blocking merits architecture, however, places no restrictions on voice and data access. As the data-to-voice proportions change, the system functions as a data switch at the host controller. And there's no new cabling required. In non-blocking systems,

savings are soon realized in simplified administration.

Processing Capacity and Speed

Many installed systems operate on 16-bit processors. While this may be adequate power for today's voice-only systems with low data options, it may not be sufficient for tomorrow. Since a system's processing power is the limiting factor, they must offer enough capacity for growth. A system offering 32-bit processors can handle both present and future capacity requirements. It's valuable insurance against obsolescence, with unlimited potential for applications like video and future developments.

The office automation industry is introducing more and more devices that operate at speeds up to 10 Mbps. Only an integrated voice/data system that offers 10 Mbps connectivity and integrated local area networking can successfully carry a company into the automated office environment now evolving.

A view for the future.

In 1979 InterCom introduced the first integrated voice/data system, the BEX™ Integrated Business Exchange, and since then has been setting the pace for the office communications industry.

The system has been proving its merits in installations all across the country for more than three years. It's backed by comprehensive support and refined through an ongoing program of research and development. Software-oriented, adaptive to new technology and protected from obsolescence, the BEX offers you the connectivity needed for tomorrow's automated offices.

We hope this look at the issues of voice/data integration will be useful in your system selection. InterCom has met the communications requirements of companies in a wide range of industries. And today, our representatives are ready to help you evaluate your specialized needs.

InterCom Inc.

Integrating voice and data communications.

601 InterCom Drive • Allen, Texas 75002 • 214-727-9441 • 1-800-INT-800

COMMUNICATIONS

Continued from page 103

asynchronous digital termination unit for use with digital data service (DDS) networks.

The TP-511 is based on the vendor's synchronous TP-501 channel/digital service unit and is said to require fewer components and reduce the number of devices required to implement asynchronous DDS.

The device is said to feature circuit status indicators and front-panel switches for line control, business equipment loopbacks and pattern generation for user-controlled, end-to-end testing.

It is available in a stand-alone desktop version or a high-density, rack-mount version. The price is \$1,175.

Teleprocessing Products, Building 7K, 4555 E. Industrial St., West Valley, Calif. 93063.

HADAX ELECTRONICS, INC. Data switching system

A manual data switching system that lets users switch data lines between active and fail-back equipment was introduced recently by Hadax Electronics, Inc.

The system reportedly enables test and monitoring equipment to be placed on-line for data diagnostics. It also reportedly provides a means of centralizing data line routing.

The standard 19-in. rack-mount unit accommodates up to 16 card modules. Card interfaces include RS-232C/V.24, RJ-11C and RJ-45C, Coax BNC, IBM Twinaxial, Wang Laboratories, Inc. BNC/TNC and V.35/CCITT. The standard rack-mount unit sells for \$170.

Hadax Electronics, 79 Hazel St., Glen Cove, N.Y. 11542.

ALPHA MICROSYSTEMS, INC. AM-318 I/O controller

Alpha Microsystems, Inc. has announced a 17-port, I/O controller designed for use in its multiuser business microcomputers.

The AM-318 controller is said to provide 16 RS-232 ports and one Centronics Data Computer Corp.-compatible parallel port on Alpha Microsystems S-100 bus. According to the vendor, the controller uses only one slot rather than the three slots required to provide the same number of ports on the company's previous model, the AM-300.

It is said to feature a watchdog timer and a reboot on break key function. Available now, it has a suggested retail price of \$1,325.

Alpha Microsystems, 17332 Von Karmen Ave., Irvine, Calif. 92714.

AT&T from page 99

and the Dimension 3000, the 386 AP can reportedly be used to manage up to 15,000 station moves and changes. To be made available early in 1985, the 386 AP will be priced from \$179,000.

The voice system the company introduced, called the Audio Information Exchange, or Audix, is the first phase of the newly created unified messaging scheme. As part of the company's Information Systems architecture, unified messaging is meant to, eventually, provide for the integration of different message systems, such as voice and electronically displayed text.

Audix is compatible with the Synapse 85, Dimension 3000 and Dimension 600 PBXs. Designed to be integrated into these switches, Audix essentially provides individual users with capabilities similar to an answering machine. Audix can be configured with 32 ports, which is reportedly adequate to service up to 4,000 users.

Audix systems range in price from \$140,000 to \$430,000, depending on the number of ports and hours of storage provided. It will become available in 1985.

LINK from page 99

link Instant Mail Service, Online Conversation, Western Union's FYI News service, an on-line directory of Easylink subscribers, Help messages and information on new services.

Western Union also announced Mailbox Alert, a digital paging service said to provide Easylink users with instant notification when messages are received in their electronic mailboxes. Users will receive a flash-and-beep digital pager that will be signaled by local paging carriers when a message is received.

Mailbox Alert, priced from \$15 to \$20 per month, will become available in 30 areas throughout 1985.

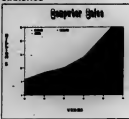
Prices for Easylink are dependent on the time of day and the length and speed of transmission. A Western Union spokesman said a 1,200 bit/sec peak-hour transmission costs 45 cents/min, with a 40% discount for off-peak hours. There is no minimum usage for the first three months, but there is a \$25 minimum monthly usage fee after three months.

Western Union also announced that Businessland, Inc. has agreed to offer Western Union's Instant Mail Manager Software, designed for use with Easylink, in Businessland stores. Instant Mail Manager has a suggested retail price of \$95.

Western Union is located at One Lake St., Upper Saddle River, N.J. 07468.

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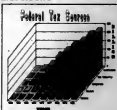
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HARD TALK
Tom Parker
Old School Editor

IBM CPUs lauded but play suspected

Strong performance enhancement and a political play to show industry analysts summed up IBM's two most recent mainframe announcements, the 4381 Model Group 3 and the 3083 Model CX (CW, Oct. 29).

The long-predicted dual processor version of the 4381 processor was generally received by industry watchers as a well-priced addition to the 4300 line. The 4381 Model Group 3 processor, which IBM said offers internal performance between 1.7 and 1.9 times greater than the 4381 Model Group 2 processor, appears to have the ability to serve a dual role for IBM, noted Frank Gena, an analyst for the Boston-based Yankee Group market research firm. Gena said larger commercial users of the 400 processor line can take advantage of the increased performance of the Model Group 3.

But at the same time, Gena noted, IBM appears to have positioned the Model Group 3 to offer engineering-oriented performance to retail Digital Equipment Corp.'s newly announced VAX 3600 and Data General Corp.'s MV/1000 superminicomputers. Gena added that IBM's 4381 Model Group 3 plus DEC's recent VAX 3600 announcement may put more pressure on Data General and Prime Computer, Inc., to unveil more powerful top-end processors.

IBM's 3083 Model CX was given less favorable reviews by industry analysts, largely because it appears unclear whether many users will ever buy the unit. Charles Greco, an analyst with the Framingham, Mass.-based market research firm International Data Corp. (IDC), said IBM claims the entry-level 3083 Model CX was designed for users who expect to experience a 75% annual growth in processing power. IBM said the advantage of the Model CX is that users who install the system have the option of gaining a tenfold field-upgradable power improvement if they were to migrate up the 3080 line to IBM's top-of-the-line with a 3084 Model QX processor.

But Greco pointed out that

See IBM page 117

Sun Microsystems unveils two graphics workstations

Unix-based Sunstations support Ethernet

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. has announced the Sun-2/60 Desktop Sunstation and the Sun-2/160 Color Sunstation, both for graphics applications and both based on the Motorola, Inc. 68010 microprocessor. The company also announced the Sun Network File System.

The two workstations run Version 4.3 of AT&T's Unix operating system and support the Ethernet local-area network. The Sun workstations also support the C, Fortran and Pascal programming languages and offer the company's Sunstore graphics and Sunwindows window manager software, according to the vendor.

The Sun-2/60 features from 1M to 4M bytes of main memory and up to 16M bytes of virtual address space per process. A floating-point accelerator for computer-intensive applications is optional. The 2/60 features a 19-in. screen with 1,152-by-900-pixel resolution and noninterlaced display.

The 2/60 is said to operate without a local disk drive by demand paging over the network to mass storage on the file server. Several diskless machines can share the

See SUN page 116

Datamedia introduces supermicros, terminals for Unix, Pick environments

By John Deason
Old Staff

NASHUA, N.H. — Datamedia Corp. has announced five 932 supermicrocomputer models and the Elite 50 and Elite 90 display terminals.

The 932 Models 1610, 1650 and 1624 run on the Unisoft System Corp. Unisoft operating system, a derivative of AT&T's Unix System V.

The 932 Models 20P and 30P use the Pick operating system from Pick & Associates, Inc.

The Elite 90 display terminal was designed for use in a Unix environment with the 932, and the Elite 50 is a Digital Equipment Corp. VT100-compatible display terminal designed for use with the Pick operating system.

See DATAMEDIA page 114

IBM controller links processors, finance system

RYE BROOK, N.Y. — IBM has announced the IBM 4701 Finance Communication Controller Model 3. The unit allows users to attach 4700 Finance Communication System terminals to IBM 3080 series, 4300, 6100 and System/34, 36 or 38 processors.

IBM also announced enhancements to the 4700 Finance Communication System that allow the unit to support the Model 3 controller, as well as X.25 packet-switching networks.

The 4701 Model 3 provides a maximum

See FINANCE page 112

AM-1000X micro debuts, prices cut on AM-1000E line

IRVINE, Calif. — Alpha Microsystems, Inc. has announced the AM-1000X desktop microcomputer for the AM-1000 desktop family. It features a 654-in. Winchester disk drive with a formatted capacity of 65M bytes.

The company also announced price reductions on the AM-1000E systems, which feature a 30M-byte Winchester disk drive.

The AM-1000s are based on the Motorola, Inc. 68000 microprocessor and the company's Amos multiuser, multitasking operating system. The price of the AM-

See ALPHA page 112

■ Collier-Jackson, Inc. introduces Hewlett-Packard Co.-based personnel information system for business/300

■ Mohawk Data Sciences Corp. announces three printers for its MDS Hero Intelligent Workstation/311

■ Able Computer Co. reveals bus converters said to increase the performance of Digital Equipment Corp.'s PDP-11 minis/111

INSIDE

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7221 C 2495
Zeta 8 Plotter 1295
Silver Reed 550P 325
Smith-Corona TP-1 295

SYSTEMS & PERIPHERALS

TURNKEY SYSTEMS

COLLIER-JACKSON, INC.
CJ/Personnel for HP 3000

Collier-Jackson, Inc. has introduced a Hewlett-Packard Co.-based turnkey system for personnel departments in medium and large companies.

CJ/Personnel uses the HP 3000 superminicomputer. Its capabilities include storage and retrieval of personnel information, current and historical job-related data, skills inventory, resume information and attendance graphics.

The system also uses applicant listings, employee status notice, attendance reports, benefit statements, federal Occupational Safety and Health Administration standards and employee transfer information, the company said.

The system also reportedly provides the ability to share information with other systems, the vendor said. For example, if an applicant becomes a full-time employee, the information can be transferred directly into the payroll system.

Cost of the system is \$38,500, including CPU, 50-M-byte disk with cartridge tape, a printer and three CRTs. Larger configurations are available.

Collier-Jackson, 3707 W. Cherry St., Tampa, Fla. 33607.

K/W CONTROL SYSTEMS, INC.
Monitoring and Management System

K/W Control Systems, Inc. has announced the Monitoring and Management System for centralized users of multiple hardware systems.

The system is intended for use with large DP and communications facilities maintaining multiple electrical, electronic, pneumatic or engine-driven systems, including uninterruptible power supplies, motor generators, frequency converters, telecommunications equipment and lighting systems.

The system consists of the IBM Personal Computer XT with 10-M-byte fixed disk, color monitor, floppy disk drive, graphics printer and System Interface Unit (SIU). The SIU provides all communications links to attach the Personal Computer XT and up to 128 Remote Device Controllers (RDC). RDCs are available in three types: analog input, up to 32 inputs; digital input, up to 16 inputs; and event recorder, up to 16 inputs.

System software is loaded into the Personal Computer XT's hard disk via a 320K-byte diskette and is resident in the Personal Computer XT's 10-M-byte fixed disk. All system displays are provided on the Personal Computer XT's 13-in. color monitor, which provides up to 16 colors.

The price for the Monitoring and Management System with one analog input RDC is \$17,000.

K/W Control Systems, Department MMS, South Plank Road, Middletown, N.Y. 10940.

FLEXSTAR CORP.
FS8500 Analog/Digital Test System

Flexstar Corp. has announced the FS8500 Analog/Digital Test System, said to perform subassembly-level tests on any head/disk assembly used in any 5¼-in. or 3½-in. Winchester disk drive running Seagate Technology Inc.'s ST-506/412-type interfaces.

The tester is controlled by an IBM Personal Computer or compatible microcomputer, the vendor said.

The system includes a single-board disk drive tester that reportedly performs digital read/write testing via the ST-506/412 interface; a Personal Computer interface card that plugs into the I/O card slot to interface the Personal Computer with the drive tester card; and the analog probe. The test software runs under IBM's PC-DOS 2.11.

The system can be incorporated into a Personal Computer with 256K bytes of main memory, dual floppy disk drives for test data storage, a monitor and printer. The tester performs functional status, read/write and timing tests for hard disk drives, the firm said.

The single-unit price of the FS8500 is \$24,000, the vendor said.

Flexstar, 780 Trimble Road, San Jose, Calif. 95131.

DATA STORAGE

COMPURO CORP.
Floppy/hard disk subsystem

Compuro Corp. has announced a 5¼-in. floppy/hard disk subsystem for use as a mass storage option for its System 816 family of IEE 686/5-100 bus-compatible microcomputers.

The disk subsystem features two 5¼-in. Mitsubishi Electronics America, Inc. double-sided, double-density 96 track/in. half-height floppy disks with a total of 1.6M bytes of formatted storage and a hard disk with either 20M, 40M or 80M bytes of storage. It also includes Compuro's Disk

3 direct-memory access disk controller and Digital Research, Inc.'s Concurrent DOS 3.16 operating system.

Double-sided 5¼-in. disk formats supported include Epson America, Inc.'s QX10, the IBM Personal Computer, NEC Information Systems, Inc.'s PC-801A and Zenith Data Systems Corp.'s Z-100.

Single-sided 5¼-in. disk formats supported include IBM, NEC's PC-8801A single-density, Xerox Corp. 820-II and Osborne Computer Corp. double-density, Texas Instruments, Inc.'s Portable Professional and Zenith's Z-90.

The 5¼-in. disk subsystem with a 20M-byte hard disk is priced at \$4,995; with a 40M-byte hard disk, \$5,495; and with an 80M-byte hard disk, \$9,495.

Compuro, 3506 Breakwater Court, Hayward, Calif. 94545.

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SYSTEMS & PERIPHERALS

COMPUTER AUTOMATION, INC.
Winchester drive for Business/S

Computer Automation, Inc. has announced that a 140M-byte 5M-in. Winchester disk drive is now available for its Delcance/S multitasking minicomputer system. The unit brings the total capacity of the system to 560M bytes.

The drive is compatible with Seagate Technology, Inc. 506/412 fixed disk drives and features a transfer rate of 5M-bits/sec and ferrite recording heads, according to Computer Automation.

A typical configuration for a 140M-byte system supporting eight users is approximately \$12,000, the company said.

Computer Automation, Computer Products Division, 2181 DuPont Drive, Irvine, Calif. 92713.

TERMINALS

TEKTRONIX, INC.
CX4100 series

Tektronix, Inc. has announced its CX4100 series of computer display terminals, which were designed for IBM S270 plug-compatibility.

The terminals reportedly include the feature set of the Tektronix 4106, 4107 and 4109 terminals, while providing direct console connection to an IBM 3274 cluster controller, 32-line 3278/3279 alphanumeric emulation, an IBM-style keyboard and an expanded range of drivers for Tektronix peripheral devices.

The series was intended to let IBM host users utilize Tektronix Plot 10 graphics commands while retaining IBM 3270 alphanumeric and key-

board. The CX series reportedly carries out a greater portion of the graphics tasks at the terminal than the programmed symbol-cell graphics in an IBM environment. According to Tektronix, Plot 10 graphics commands locally perform vector-to-raster conversions and rapid area fill, relieving the host CPU burden.

The terminals — the CX4106, CX4107 and CX4109 — are said to retain their RS-232C connection and are able to switch between IBM and RS-232C hosts without ending either session.

They reportedly feature a 60Hz noninterlaced display with 4,096-by-4,096-pixel addressability in a 640-by-480-pixel matrix, the ability to show solid or dashed lines in up to 16 colors using eight line styles, 11 marker types, zoom and pan, user-defined fonts and macros and local pic-

ture storage. The series also supports Digital Equipment Corp. VT100 extensions and ANSI X3.64 editing and word processing standards, according to the vendor.

The CX4106 costs \$7,960; the CX4107, \$8,960; and the CX4109, \$12,960.

Tektronix, P.O. Box 1700, Beaverton, Ore. 97075.

SOLARIS COMPUTER CORP.
Solaris 1000

Solaris Computer Corp. has announced a hardware and software package that adds IBM Personal Computer capabilities to synchronous terminals such as the Digital Equipment Corp. VT100, CIE Systems, Inc. CT-101 and Televideo Systems, Inc. Televideo 970.

The Solaris 1000 is said to provide concurrent operation of host and personal computer applications, a multiwindowing feature for viewing host and Personal Computer functions simultaneously and bidirectional file transfer using Microsoft Corp. MS-DOS commands or off-the-shelf file transfer software.

The Solaris 1000 plugs into the communications line between the host computer or modem and the terminal. It features a 46-key pad that provides the keys needed to make up an IBM Personal Computer keyboard and Solaris special function keys.

It consists of the keypad and a system unit housing an I/O card with an Intel Corp. 8086-3 microprocessor, two dual-sided, double-density floppy disk drives for 720K bytes of storage, an optional 10M-byte hard disk and internal memory of 128K bytes, expandable to 640K bytes. It also offers four RS-232C I/O ports, a printer port and seven expansion slots.

It can run in full-screen host mode, full-screen Personal Computer mode or split-screen mode, the vendor said. Screen image size reportedly is controlled by grow keys on the Solaris keypad, allowing the user to increase or decrease the size of each window.

Information reportedly can be exchanged between the system and the host computer, with results such as spreadsheet calculations developed on the Solaris-equipped terminal being sent to the host and host data being used by Solaris 1000 programs. The software includes the real-time and multitasking Solaris Operation System and MS-DOS 2.11.

The Solaris 1000, with 128K bytes of random-access memory and a single floppy disk drive, costs \$2,135. Solaris Computer, 1994 Turbot Court, Milpitas, Calif. 95035.

PRINTERS/PLOTTERS

EXTENDED SYSTEMS

Laser Right printer controller

Extended Systems has announced the Laser Right laser printer cluster controller for use with the Hewlett-Packard Co. 3000A Laser Jet printer.

Laser Right is said to allow up to three workstations to share one Laser Jet printer. The controller is said to work with either parallel Centronics Data Computer Corp.-type interfaces or serial RS-232C or RS-422 interfaces. The product also works with Lotus Development Corp.'s 1-2-3 and software for IBM Personal Computers, the vendor said.

Continued on page 111

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SYSTEMS & PERIPHERALS

Continued from page 108

Laser Right comes with 128K bytes of buffer memory and can be expanded to 512K bytes. The HP Laser Jet printer prints 300 by 300 dot/in. resolution at up to eight page/min., the company said.

The price for Laser Right is \$4,495, the vendor said.

Extended Systems, P.O. Box 4937, 6042 Morris Hill Road, Boise, Idaho 83711.

CALCOMP

Model 1044 plotter

Calcomp has announced the Model 1044 dual-mode pen plotter, featuring eight pens and a plotting capability up to Anal Size E or International Standards Organization Size AO standards.

The Model 1044 is aimed at mechanical design, architectural, engineering and construction, integrated circuit design, printed circuit board design and mapping applications.

Features include an eight-pen turret said to exchange pens automatically over the plotting surface; an Integrated Communications interface that allows plotter compatibility with Microsoft Corp.'s MS-DOS and Digital Research, Inc.'s CP/M-based systems. Built-in diagnostics are said to run five tests each time the plotter is turned on.

The Model 1044 is said to provide a plotting speed of 14 in./sec, the company said. The plotter offers three interfaces — RS-232, RS-449 and IEEE-488. It is scheduled to be shipped in December. The price for the 1044 is \$11,995, the vendor said.

Calcomp, 2411 W. LaPalma Ave., Anaheim, Calif. 92801.

MOHAWK DATA SCIENCES CORP.

MDC 160, 200 series printers

Mohawk Data Sciences Corp. has announced two MDS 160 printers and one MDS 200 series printer for use with the MDS Hero Intelligent Workstation and the company's Super 21 communications processor.

The 160 series printers are dot matrix printers and the 200 series models are correspondence-quality printers. The 160 series, featuring 80- and 166-col. models, is intended to print drafts, near-letter-quality text, graphics and reports. The 166-col. model is said to be suited for spreadsheet applications such as Microsoft Corp.'s Multiplan and MDS' Plan 21. Both 160 series printers print bidirectionally at 160 char./sec for drafts and 97 char./sec for business correspondence.

The price of the 80-col. printer is \$995, and the 166-col. printer costs \$1,295, the vendor said.

The 200 series operates at 260 char./sec for draft quality and 60 char./sec for letter quality. The price of the 200 series printer is \$3,495.

Mohawk Data Sciences, Seven Century Drive, Parsippany, N.J. 07054.

POWER SUPPLIES

CLARY CORP.
UPRjr.

Clary Corp. has announced a series of on-line uninterruptible power supplies called UPRjr., intended for supermicrocomputers, minicomput-

ers and local-area networks.

The Clary UPRjr. is available in 750-VA, 1.25-kVA and 2.5-kVA ratings. The cabinet measures 33.5-in. high by 17.4-in. wide by 20-in. deep.

Prices for the UPRjr. start at \$3,495, the vendor said.

Clary, 320 W. Clary Ave., San Gabriel, Calif. 91776.

BOARD-LEVEL DEVICES

INTERCONTINENTAL MICRO

SYSTEMS

WS80X

Intercontinental Micro Systems has announced a board that converts a dumb terminal into an intelligent independent workstation.

The WS80X board has 128K bytes

of random access memory, a Zilog, Inc. 280 microprocessor operating at 4 MHz or 6 MHz, two serial ports, one parallel port and an Datapoint Corp. Arcnet interface.

According to the company, the parallel port allows the WS80X to act as an independent processor. Shugart Associates Standard Interface and Small Computer Systems Interface permit peripheral additions such as floppy drives, hard disks, removable cartridge drives or streaming tape drive backup.

Intercontinental's Micronet network architecture and subsystems allow the WS80X to interface with 8- and 16-bit processors.

Cost of the 4-MHz board is \$905; the 6-MHz board is \$1,045.

Intercontinental Micro Systems, 4015 Lawerton Court, Anaheim, Calif. 92807.

ABLE COMPUTER CO.
Microverter, Microverter Plus

Able Computer Co. has announced two bus converters designed to increase the performance of Digital Equipment Corp. PDP-11 minicomputers.

The Microverter is said to be a quad-width card that plugs into a PDP-11's Q-bus backplane and addresses up to 4M bytes of Q-bus memory while driving 10 DEC Unibus loads.

The Microverter Plus consists of a modified Unibus backplane, voltage regulator and Microverter board. When coupled with a DEC PDP-11/73 or PDP-11/73+, it can transform an older processor into a higher speed Unibus system, according to the vendor.

Continued on page 112

Data Design's Financial Software
Tops Databases Survey



SYSTEMS & PERIPHERALS

Continued from page 111

The products are said to be compatible with current versions of DEC RSTS/E and RSX-11.

Scheduled for October shipments, the Microverter costs \$2,300, and the Microverter Plus costs \$3,575, the vendor said.

Able Computer, 1732 Reynolds Ave., Irvine, Calif. 92714.

BOUSTON COMPUTER SERVICES, INC. MCPU/300

Boston Computer Services, Inc. has introduced the MCPU/300 interface board, said to allow Texas Instruments, Inc.'s Business System 300 to expand its support from seven CRTs and/or printers to 16.

The MCPU/300, an updated version of the firm's MCPU/S front-end

processor, is said to allow up to 12 RS-232 devices to connect directly to the interface card.

The product, which incorporates both hardware and software, acts as a front-end processor for the System 300's CPU.

The MCPU/300 is available in either a 12- or six-channel version and consists of the company's 16-bit microprocessors, 32K bytes or 64K bytes of memory and RS-232C interfaces. Using the software supplied with the board, the System 300 can be connected to most Amdahl CRT terminals and personal computers, the company said.

The price for an MCPU/300 is \$2,750, according to a vendor spokesman.

Boston Computer Services, Building C, Suite 101, 11221 Richmond Ave., Houston, Texas 77062.

MACROLINK

Macro-3 disk controller

Macrolink has announced the Macro-3 disk controller, said to be compatible with Perkin-Elmer Corp.'s 3200 series of superminicomputers.

The single-board module is said to offer simultaneous emulation of PE's Intelligent Disk Controller and other Mass Storage Module disk system. PE users previously had to buy two different disk controllers to read both formats, the vendor said.

All drive configurations are supported in microcode by a single set of erasable programmable read-only memory devices, according to the company.

The price for the Macro-3 is \$3,475.

Macrolink, 1150 E. Stanford Court, Anaheim, Calif. 92805.

MOSTEK CORP.

MK76702 board

Mostek Corp. has announced a 1M-byte dynamic random-access memory VMEbus-compatible board, the MK76702, that features a long-word cache with typical read access time of 135 nsec on a cache hit and 300 nsec on a cache miss rate.

The product is available with or without parity generation and checking and is capable of 8-, 16- or 32-bit data transfer, the company said. Additional features include 23-bit address, programmable, starting address and access and status LED indicators.

The price of the MK76702 board is \$3,500, the company said.

Mostek, 1815 W. Crosby Road, Carrollton, Texas 75006.

See BUSINESS page 114

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And consider what these solutions will do for you and the people who use your system.

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Software Corporation of America

*Consent from Interdata with EasyPROCLIB users.
*Consent from Software Corporation of America.
EasyPROCLIB for IBM, VME/386, MVS, S/36, VMS, P/36

FINANCE from page 107

storage capacity of 1.5M bytes and a minimum capacity of 512K bytes. Performance improvement over the Model 2 is provided by expanded main memory and hardware error correction. The Model 2 can be upgraded to the Model 3 in the field, IBM said.

Shipment of field conversion kits is scheduled for March, and shipment of new units is scheduled for August 1985. The price for the Model 3 with 512K bytes main memory is \$15,370, IBM said. The charge to convert from the Model 2 with 192K bytes of memory to the Model 3 with 512K bytes of memory is \$5,076, IBM said.

The enhanced 4700 Finance Communication System Controller Data Support provides disk/diskette enhancements that include the ability to update the header label of a keyed data set and to do so by any station when the data set is closed. The local configuration facility has been enhanced to support the Model 3 controller and the Systems Network Architecture feature on the 4701 Models 2 and 3, IBM said.

Enhancements for system start-up include loading of optional modules that are optimized for more efficient storage and selective elimination of loading of one or more optional modules at initialization, IBM said. They are included in the Model 3 price.

More information may be obtained from IBM, 900 King St., Rye Brook, N.Y. 10573.

ALPHA from page 107

1000X, which features 128K bytes of main memory, ranges from \$12,165 to \$15,965, the company said. Backup configurations offered include the company's videoassisted recorder (VCR) backup, a combination VCR and floppy disk backup or a VCR combined with a 40M-byte streaming cartridge tape.

Alpha Microsystems also announced a 55M-byte Winchester disk storage subsystem for use with the AM-1000X desktop. The price of the subsystem is \$5,965.

Prices for the AM-1000X systems are now \$9,665 for systems with the VCR backup, \$10,835 for the VCR and floppy disk backup and \$12,835 for the VCR and 40M-byte streaming tape backup, the company said.

Alpha Microsystems is located at 17323 Van Korman Ave., Irvine, Calif. 92714.

Introducing the Kodak WHIZ KIDS



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Eastman Kodak Company, Business Systems
Markets Division, Dept. DP4625, Rochester, NY
14650.

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SYSTEMS & PERIPHERALS

BOARDS from page 112

ANDROMEDA SYSTEMS, INC.
MM11 board for DEC Q-bus

Andromeda Systems, Inc. has introduced a memory board for the Digital Equipment Corp. Q-bus.

Compatible with DEC's LSI-11/23, 11/73 and Microvax I processors, the MM11 is a dual-width module that has a typical access time of 50 nsec in the block transfer mode, the company said. The MM11 is compatible with both 256K- and 64K-byte random-access memory chips.

The MM11 includes user-programmable jumpers for 25- or 18-bit addressing, 16- or 256-word block-mode capability and standard or optional control status register address, the company said.

The price of the MM11 with 512K-byte capacity is \$1,295, the vendor said.

Andromeda Systems, 9000 Elton Ave., Canoga Park, Calif. 91304.

CLEARPOINT, INC.
Q-COM-80 card

Clearpoint, Inc. has announced the Q-COM-80 card that combines 1M byte of memory, two serial lines and 128K bytes of erasable programmable read-only memory on a dual-height card.

The Q-COM-80 is said to offer the same functionality of Digital Equipment Corp.'s MXV11-B with eight times the memory, block-mode direct memory access, on-board control status register for full parity support and a 90-nsec access time.

The card has two 28-pin universal

sockets, giving it the capacity to achieve up to 64K bytes of programmable read-only memory and allowing users to configure DEC PDP-11/23 or PDP-11/73 minicomputers with three dual slots.

The single-quantity price ranges from \$1,295 to \$3,190, depending on configuration, the vendor said.

Clearpoint, 106 South St., Houghton, Mass. 01748.

AUXILIARY EQUIPMENT

FITNEY BOWEN, INC.
8100 facsimile machine

Fitney Bowen, Inc. has announced the 8100 facsimile machine, said to be capable of transmitting copy at a speed of 20 sec/page with a 9.6K bit/

sec modem.

Standard features of the machine, which weighs 22 lb, include automatic contrast control, a 40-line activity journal and turnaround polling, the vendor said. The product's document feeder is said to be capable of stacking up to 30 pages.

An RS-232C attachment, allowing the machine to receive telex messages or act as a remote printer from personal computers, is optional.

The price of the 8100 is approximately \$4,000, the vendor said.

Fitney Bowen, 153 Crosby St., Stamford, Conn. 06906.

WILSON LABORATORIES, INC.
Floppy Drive Test Station

Wilson Laboratories, Inc. has announced the Floppy Drive Test Station, or FTS-500, said to accommodate four 5¼- or 5-in. floppy drives for testing and calibration.

FTS-500, when combined with the company's MPX-600 Floppy Drive Analyzer, is said to provide all mechanical and electronic test functions and calibration measurements with a minimal requirement for an oscilloscope.

Tests include read margins, full step, write data and read data. Calibration operations include head radi-

Continued on page 118

MICROS from page 107

Features of the 932 supermicro include a maximum of six 512K-byte random-access memory (RAM) boards, a 20M-byte cartridge tape and maximum unformatted disk storage of 572M bytes. The system supports up to four disk drives, serial and parallel printer ports and an IEEE 488 interface bus. Models 1620 and 1624 are based on the Motorola, Inc. 68010 microprocessor and feature hardware-assisted demand paging, a 2K-byte cache and 1M byte of RAM.

The price for Model 1620 with Unix, a 52M-byte hard disk and support for six users is \$15,575, the company said. The price for Model 1624 with Unix, a 149M-byte hard disk and support for 16 users is \$22,435, the company said.

The price for Model 1610, which is based on the Motorola 68000 microprocessor and can support up to six users in a configuration with Unix and a 52M-byte disk, is \$12,930, the company said. The 1600 series also supports the Pict operating system and up to 25 users, the vendor said.

The Models 20P and 30P, which both incorporate the Pict operating system, are based on the Motorola 68000 microprocessor and feature a 20M-byte cartridge tape, 52M bytes of unformatted disk storage, storage capacity to 572M bytes, serial and parallel printer ports and an IEEE 488 interface bus. Each model supports up to 25 users, the vendor said.

The price for Model 20P, with a 20M-byte main memory and support for up to six users, is \$12,005, the vendor said. The price for Model 30P, with 1M byte of main memory and support for up to 15 users, is \$14,350, the vendor said.

The price for the Elite 90 purchased separately is \$1,095, for the Elite 90, \$1,045, the company said.

More information may be obtained from Datamedia, 491 Amherst St., Nashua, N.H. 03063.

"We can't afford to lose data! That's why we bought insurance... Data Check Recovery."



Allen Morris,
Systems
Manager
CASAM Inc.,
Burlington, CA

"Before we got Data Check Recovery, we more or less threw up our hands in desperation when we had an I/O error—all that pack analyzing, reinitialization, restoring. It all takes time; it's cumbersome.

"Since we installed Data Check Recovery, I've cut down the amount of time I spend on those problems.

"Historically, we've had quite a few problems with data checks on the 3380 packs we use on our MVS system. And as a software R&D firm, being able to get at the latest version of our software is critical to us; having to devote programmer time to correcting DASD errors is wasteful.

"So we bought Data Check Recovery as an insurance policy. And it's paid off.

"For instance, one morning the SYSLOG data set indicated data checks had occurred during the nightly backup of the packs. All I had to do was take the information from the error message and plug those parameters into the DCR procedures—and what could have been a permanent disaster became a very minor inconvenience.

"Data Check Recovery is so easy to run that operations will soon run it themselves, without having to check with the systems group.

"DCR is our first line of defense against disk I/O errors. And it just keeps paying for itself."

Data Check Recovery is a powerful, dependable utility that recovers data that has become unreadable due to permanent I/O errors—hard data checks, track overruns and several types of equipment checks. Data Check Recovery supports all OS operating systems.

For more information about how DCR can keep permanent I/O errors from turning into permanent disasters, call Software Corporation of America toll-free at 800/398-7634. In Virginia, call 703/471-1845.

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ITT
COURIER

SYSTEMS & PERIPHERALS

Continued from page 114

all alignment, head amplitude test, drive speed adjustment, index-to-data alignment, write protect switch and track-zero sensor adjustment.

The price for the FTS-500 is \$1,466, the company said.

Wilson Laboratories, 2257 N. Barstow St., Orange, Calif. 92665.

COMPUTER SECURITY SYSTEMS, INC.

Computer Security Systems, Inc. has announced the Arbitrator

data encryption and terminal authentication system, said to employ patented hardware circuitry to encrypt and decrypt data transmissions.

Arbitrator is a self-contained peripheral that reportedly works simultaneously in real time with data entry. It is said to require no software programs, key locks, password, magnetic cards or other accessories.

One Arbitrator is connected to the host computer or CPU, and another to a remote terminal. The telephone connection of any unauthorized transmission is automatically broken. Anyone attempting to eavesdrop

on a transmission receives random encryption in a scrambled pattern.

The single-unit price for one Arbitrator is \$4,000; at least a pair is required for operation, the firm said.

Computer Security Systems, Suite 1007, One Huntington Quad, Melville, N.Y. 11747.

ANALOGIC CORP.

Ands 5600

Analogic Corp. has announced the Ands 5600 distributed data acquisition system (DAS), an enhancement of the Ands 5400 DAS for use with

Digital Equipment Corp.'s Q-bus and Hewlett-Packard Co.'s direct memory access interfaces.

The 5600 is said to cut the burden on the host computer. Two fiber-optic cables provide a 2-Mbps serial link at up to 2,000 feet between sites.

Typical applications for the 5600 include fossil and nuclear power plant monitoring, pipe vibration analysis and aircraft R&D.

The price for a basic Ands 5600 is \$6,800, the company said.

Analogic, 8 Centennial Drive, Centennial Industrial Park, Peabody, Mass. 01961.

SUN

from page 107

disks of a Sun-2/120 or Sun-2/170 file server, the company said.

The price of a Sun-2/60

with 1M byte of memory is \$9,900, the vendor said.

The Sun-2/160 has a 19-in. screen with 1,152 by 800-pixel resolution and noninterlaced display. Eight color planes are said to be capable of simultaneously showing 256 colors selected from a palette of 16 million. The 2/160 is also capable of accessing up to 16M bytes of virtual memory per process, the vendor said.

The 2/160 can operate either as a stand-alone workstation or in a local-area network with other Sun workstations and other vendors' equipment, according to the company. A 12-slot card cage and VME bus reportedly allow the 2/160 to be customized. Sun also provides an Intel Corp. Multibus-to-VME adapter board.

The 2/160 can be configured with mass storage options from 71M bytes to 380M bytes of formatted capacity, the company said. Both 1/4-in. streaming cartridge and 1/2-in. tapes are available for backup, and a hardware floating-point accelerator option is available for computer-intensive tasks.

The price for a Sun-2/160 with 1M byte of main memory is \$32,900.

The Network File System reportedly supports transparent networkwide read and write access to directories and files. Sun is publishing the file system and supporting protocol specifications, which the vendor said are hardware- and operating system-independent.

Sun Microsystems is located at 2650 Garcia Ave., Mountain View, Calif. 94043.

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IBM 3270 users: you can the mini/micro universe

IBM 3270

Click. Flip the switch on the Matchmaker 3000 and your 3270 terminal thinks it's a VT-400. Now you can communicate with a micro or mini computer. Access data networks such as Dow Jones and The Source, as well as local area networks, such as Net One. Send and receive electronic mail. Now the whole universe of ASCII is open to you.

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The Matchmaker 3000 is the enhancement for 3270 type terminals that allows them to emulate VT-400, ADM-3A and other types of ASCII terminals and to access a wide range of mini and micro computers. DEC. Hewlett-Packard. Data General. Prime. Texas Instruments. And others. Access them directly. Or through a modem. Via data switch or PEX at speeds from 110 bps to 19.2 Kbps.

Plug-in installation between terminal and cluster controller is quick and easy. Operation is simple. A single switch takes you from 3270 mode to ASCII mode and back again. And the cost? Only \$695.*

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SYSTEMS & PERIPHERALS

IBM from page 107

while IBM has announced that the Model CX will be field upgradeable, those field upgrade kits will not be available until 1986 — a prospect that may be distasteful to users expecting rapid growth. For that reason, Greco speculated, some users may choose the larger 3080 Model EX processor. Upgrade packages for that processor are currently available.

The Model CX announcement gives users a hint that the 3080 line may remain a viable product when the so-called Sierra line of mainframes is announced.

The 3083 CX "was an IBM-selfish announcement," noted Ken Harvey, president of Computer Systems Planning by Ken Harvey, Inc. in Toronto. Harvey noted that the Model CX may reflect an ongoing struggle between in-

ternal IBM development groups.

Since IBM funds many internal development projects, there is often a political power play to move development projects out to users as products.

While not a strategic product for IBM, the Yankee Group's Gens said, the 3083 CX also made a political statement to users. Gens noted that there has been a concern building among 3080 series users that they may be

left out in the cold by IBM's rumored announcement of a new line of high-end processors.

The Model CX announcement, Gens said, gives users a hint that the 3080 line may remain a viable product when the so-called Sierra line of mainframes is announced. Since the Model CX appears to be simply a scaled-down version of other 3080 machines, Gens noted, offering the product does not really increase IBM's costs.

While the sweeping Oct. 26 product announcement did not contain any major hardware enhancements to IBM's System/36 small business system, the unit may have undergone a significant transformation as a result of several software announcements. By giving the System/36 the capability to act as a controller for IBM microcomputers, IBM appears to have made a major switch in emphasis in its distributed processing strategy, noted IDC's Hank Jensen. Since 1979, IBM has offered the 8100 as its showcase distributed data processing (DDP) system. Now IBM appears to have bestowed the System/36 with the top DDP title, Jensen said.

"The 8100 has at least four broken legs and should be shot," Harvey said, noting that the unit has never been one of IBM's more successful products.

But IDC's Jensen said that while he believes IBM has switched its DDP focus to the more popular, less expensive System/36, IBM will not abandon 8100 users. Jensen noted that the 8100 still appears to be IBM's best offering in a Systems Network Architecture loop environment.

William Ackerman, president of DPK, Inc., a Cupertino, Calif., software development and consulting firm for 8100 users, said the System/36 will share a dual role in the IBM DDP picture with the 8100. Ackerman stressed IBM also made several software and hardware enhancements to the 8100 as part of the Oct. 25 announcement, which indicates the company is not about to abandon the 8100 system.

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See us at Comdex, Booth C711.



MICROCOMPUTERS

GEM user interface bows

Tool eases interaction for nontechnical users

By Eric Bender
CW Staff

MONTESSEY, Calif. — Digital Research, Inc. has announced the Graphics Environment Manager (GEM) software family, designed to bring a common graphics-oriented user interface to personal computers based on the Intel Corp. 8086 family of microprocessors running Microsoft Corp.'s MS-DOS operating system.

GEM, an operating system extension, will offer an easy-to-use interface for MS-DOS applications similar to the access provided by Apple Computer, Inc.'s Macintosh, Digital Research officials said. "Because people find it easier to interact with a computer in a visual manner, GEM will effectively open up the personal computer market" to those who do not want to learn complicated commands, claimed company President John Rowley.

Acting as an application programming interface, GEM is said to supply overlapping windows, data interchange facilities, graphics device support, pull-down menus, icons and support for pointing devices such as a mouse. The software will be offered to OEMs in the first quarter of 1985. GEM software reportedly can run on any MS-DOS-based or Digital Research



Graphics Environment Manager application

Concurrent DOS-based machine "once the small amount of software code that controls the graphics screen display and pointing device has been written." Because of this, independent software vendors can write one version of their programs that can be quickly ported to other machines, the vendor said. In some cases, GEM software written for one system, such as the IBM Personal Computer, will run without modification on other microcomputers, Digital Research said.

As one Digital Research executive said, GEM initially is being released as a single-tasking package because with four graphics applications running at once, Intel 8086-based computers "just don't give you enough horsepower." Software hooks have been built into GEM to allow multi-

See GEM page 134

Two Wordstar packages out from Micropro

By Kathleen Sullivan
CW West Coast Bureau

SAN RAFAEL, Calif. — Micropro International Corp., which launched word processing on personal computers five years ago with Wordstar, unveiled two successors to its flagship product on Oct. 31.

Wordstar 2000 and Wordstar 2000 Plus reportedly feature mnemonic commands (for example, pressing "C" to copy), simplified menus, an UNDO command, context-sensitive on-screen Help and user-definable function keys. In addition, the Wordstar 2000 family is said to include:

- Format sheets. Users can choose from a variety of preformatted page styles or create their own styles, eliminating the need to reset tab and margin settings continually or retype frequently used headings.

- Keystroke glossary. Users can store text or a series of commonly used commands and retrieve the information or execute the command with a single keystroke.

- Windows. Users can move text among

See 2000 page 134

Microsoft Corp. announces Basic Version 2.0 for the Apple Computer, Inc. Macintosh/120

Thoughtware, Inc. launches Trigger decision-modeling software/120

Softbridge Microsystems Corp. unveils an integrated package for personal financial planning/120

Altos Computer Systems introduces a network package connecting IBM Personal Computers to Altos multiuser systems, along with a Xenix integrated office automation package/121

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October offensive advances Big Blue's office strategy

By Eric Bender
CW Staff

On the Personal Computer side of IBM's recent barrage of product introductions (CW, Oct. 29), most industry observers gave strongly favorable reviews to the new Office System Family links to larger IBM machines, but downplayed the importance of enhancements to the 3270 Personal Computer and Personal Computer/370 families.

At the time of the announcement, Joseph Guglielmi, vice-president for general and office systems marketing for IBM's

National Accounts Division, claimed the new offerings would "integrate the Personal Computer family fully into IBM's office system strategy."

Industry analysts generally commented that the introductions would move IBM a significant distance toward that goal. In particular, most also agreed with Guglielmi that the Office System software gives the System/36 new potential to act as a departmental computer, connecting various Personal Computer family members or other workstations.

The new software "significantly en-

hances the ability of the System/36 to act as a (Personal Computer) cluster," Guglielmi said. "You can have eight virtual (Personal Computer) disks on the System/36, each with up to 32M bytes. You can get printing and file server capabilities; you can download and upload files."

IBM now gives customers multiple solutions for tying together Personal Computers, with the new PC Network positioned as "a stage preliminary to a full departmental processor," commented George Weiss of Quantum Science Corp. in New

See BLUE page 133

Utilizing micros can pay off for managers



One of the most pressing questions of the microcomputer era is, "Are managers and other professionals too stubborn to adapt to new technology?"

The answer given by software manufacturers, infatuated with mouses, pointing and other techniques to reduce the use of the keyboard, is an emphatic "yes."

But a more pointed question is whether organizations can afford old and unproductive modes of work when better ones are available.

The answer to this question may decide the fate of an entire generation of professional man-

agers. Will they learn new techniques or be superseded by those who will adapt?

When managers and other professionals confront the microcomputer effectively, their work habits change drastically and productivity improves.

But how can one measure this improvement? Productivity itself is a term better defined than defined. In a broad sense, if a microcomputer allows us to do more work in a certain time or cuts the time needed to complete a task or provides information not previously available, then productivity has been improved. Productivity can be measured when new tools allow a job to be accomplished by fewer people or enable a set number of people to accomplish more jobs.

It is incumbent that managers and other professionals improve productivity. The frequently heard cry "My time is worth more than my secretary's time" ignores the fact that the old methods simply have longer throughput. — It is

See ADAPT page 133

Madron is manager of computer services at North Texas State University, Denton, Texas.

Add-ons announced for Compaq Deskpros

HOUSTON — Compaq Computer Corp. has introduced 30M- and 10M-byte fixed disk storage units and an Intel Corp. 8087-2 coprocessor as options for its Deskpro family of IBM Personal Computer-compatible systems.

The 30M-byte fixed drive, offered as an option in place of the Deskpro Model 3's standard 10M-byte internal fixed drive, is said to be useful for handling large data bases, local-area networking and departmental accounting. The 10M-byte fixed disk drive is being offered as an external unit that would reportedly double the standard 10M-byte storage capacity of the Deskpro Model 3.

The 8087-2 coprocessor reportedly operates at 8 MHz and offers faster processing of calculation-intensive applications, such as those in engineering, science, financial analysis and forecasting. The standard 8087 processor operates at a speed of 4.7 MHz.

The 30M-byte fixed disk drive is priced at \$2,995. The 10M-byte fixed disk drive costs \$1,695. The 8087-2 coprocessor option is priced at \$375.

Compaq Computer is located at 12330 Perry Road, Houston, Texas 77070.

MICROCOMPUTERS

Trigger bolsters management decision making

COCONUT GROVE, Fla. — Thoughtware, Inc. has introduced software that reportedly helps managers to focus on the most profitable areas of their operations.

Thoughtware's Trigger software is said to incorporate an expert system for management decision making, allowing managers to monitor key performance areas, to identify exceptions to performance guidelines and to issue memos regarding the problem and its solution. Thoughtware "becomes an expert system as you accumulate a knowledge base" within the software, explained Thoughtware spokeswoman Angie Niehoff.

Trigger reportedly can be used to set guidelines for measuring operations in terms of dollars, percentages, time, behaviors, actions and volume. It can also aid in determining sales quotas, staffing levels, retail sales by type, customer service effectiveness and project management control.

Trigger is priced at \$495 and operates on the IBM Personal Computer and compatible systems with a minimum of 128K bytes of memory, dual disk drives and a printer.

Thoughtware is located at 2699 S. Bayshore Drive, Coconut Grove, Fla. 33133.

Microsoft adds Basic 2.0 for Macintosh

BELLEVUE, Wash. — Microsoft Corp. has announced Version 2.0 of its Basic programming language for Apple Computer, Inc.'s Macintosh microcomputer.

Version 2.0 can access various features of the Macintosh, including the mouse, pull-down menus, multiple windows and dialog boxes, buttons, scroll effects and music, graphics and Quickdraw routines for font, text and cursor support, Microsoft said.

Programs can be customized to incorporate Macintosh-style features, the vendor said. Basic programs can include user-defined pull-down menus and specify the size, type and location of windows. Interactive devices like buttons and edit fields can be used to construct dialog and alert boxes, according to the vendor. The mouse function reads the horizontal and vertical position of the mouse pointer and the status of the mouse button.

Programs reportedly can be edited directly in the window with the standard Macintosh CUT, PASTE and COPY commands. A second program-listing window can be displayed, which makes it possible to view or edit separate parts of a program simultaneously, Microsoft said.

Search menu

A search menu reportedly provides options to find and replace program text. The user can search for specific text, a label or the current position of the editing cursor. Selected text reportedly can be replaced for a single occurrence or throughout the entire program.

The suggested retail price for Microsoft's Basic 2.0 is \$150. Upgrades for current owners are available.

More information is available from Microsoft, Box 97200, 10700 Northup Way, Bellevue, Wash. 98009.

Softbridge Microsystems' financial planner debuts

CAMBRIDGE, Mass. — Softbridge Microsystems Corp. has unveiled Softbridge Financial Planner, an integrated package for personal financial planners that analyzes financial information, creates customized client plans and manages the planner's practice.

The system is divided into two areas, financial planning and practice management. A user interface featuring windows based on menus and forms reportedly is built into the system. A Rules-of-Thumb feature advises the planner on the client's financial condition by testing the

planner's established criteria and by testing more than 50 rules that planners typically apply, all of which the planner can customize, according to the vendor. The Softbridge Customizer reportedly gives the planner tools to custom-tailor the system.

The Softbridge Integrator is said to allow planners to move from one productivity tool or task to another with keystrokes.

The Softbridge Financial Planner runs on the IBM Personal Computer XT and Personal Computer AT with IBM's PC/DOS operating system, a hard disk and 512K bytes of random-


access memory.

Softbridge offers its system in several configurations: software only for \$4,500; software and a streaming tape drive for \$5,500; software, hard disk and streaming tape unit for \$7,000; or full system with a personal computer for \$11,000. A semiannual rate of \$600 covers all product enhancements, new tax laws and other content updates, a newsletter and technical assistance. The system will be available in January 1985.

Softbridge Microsystems is located at 186 Alewife Brook Pkwy., Cambridge, Mass. 02138.

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MICROCOMPUTERS

Altos software links IBM micro to Xenix-based net

SAN JOSE, Calif. — In a flurry of announcements late last month, Altos Computer Systems, Inc. introduced a communications product tying IBM Personal Computers to the company's Microsoft Corp. Xenix-based network, an integrated office automation software package, a four-user system and graphics software for the Altos 186 workstation.

The new PC Path "is the industry's first communications product that ties Personal Computers and compatibles running IBM's PC-DOS to a Xenix-based network," said Phil White, senior vice-president of marketing. PC Path is said to allow Personal Computers and compatible machines to share disks and printers on

Altos's 800K-bit/sec Worknet interface board.

IBM micros also can store files locally on Altos server units and spool printouts to shared network printers, Altos said. Users can access multiuser Xenix applications (including 5780 keychronous, Systems Network Architecture and X.25 communication gateways) directly from the Personal Computer, according to White. PC Path consists of a Worknet interface board and software and is priced at \$395.

Altos Office Executive is a multiwindow, multiuser integrated package that combines word processing, spreadsheet, data base and electronic mail applications. The product

"is the first integrated office automation product to combine proven productivity tools into one integrated package in an [AT&T] Unix environment," said product manager Sandra Caldwell.

The package features Redwood Software's Unifix word processing program, Microsoft's Multiplan, Relational Database Systems, Inc.'s File-It software and a proprietary electronic mail offering. Other features "include enhanced merge capability between applications, on-line Help facilities and instant-view menus of the four application areas and choices within each area," Caldwell said. Altos Office Executive costs \$695.

The new Altos 486 is a four-user, Xenix-based system built around an Intel Corp. 80186 operating at 8 MHz. A 64,000 standard configuration includes 512K bytes of random-access memory, 20M-byte hard disk drive, 1M-byte floppy disk drive, Xenix III terminal, Worknet port, printer port and two additional terminal ports.

The menu-driven Altalogr program for the Altos 186 offers printing of graphs on up to three axes simultaneously, display of more than one graph per page and logarithmic scaling, according to the vendor. It costs \$295.

Altos is located at 2641 Orchard Pkwy., San Jose, Calif. 95134.

SOFTWARE

LOGITECH, INC.

Logitech's Runtime Debugger Release 1.1 Module 2/86; Module 2 ROM; utilities package

Software updates and runtime debuggers for the Module 2/86 base language system are two of several products announced recently by Logitech, Inc.

The Module-2 Runtime Debugger is an interactive symbolic debugger for programs produced on the IBM Personal Computer by the Module-2/86 base language Systems 1.1 or Module-2/VX86 cross-development system. According to the company, it allows programmers to control and examine the execution of Module-2 programs to find software errors. The Runtime Debugger sells for \$250.

Release 1.1 of Module 2/86 reportedly provides software emulation for the support of real data type operations in addition to Intel Corp. 8087 support, as well as Clock and Real conversions modules. The product is said to improve performance of the compiler, linker and programs by 50%. The product operates under IBM's PC-DOS operating system. The version sells for \$75 for registered users, according to the company.

Logitech's Module-2 Read-Only Memory (ROM) package is said to allow programmers to prepare Module-2 programs to be burned into ROM and ROM chips to be used in systems without operating systems. The product is priced at \$350.

The company's utilities package is an extension of the standard library now available with Module-2 development systems. Decimals for integer calculations and a decoder that provides assembly language listing of Module-2 programs are among the utilities included. The package sells for \$75.

Logitech, 205 Veterans Blvd., Redwood City, Calif. 94063.

INDIVIDUAL SOFTWARE, INC. Professor DOS

Individual Software, Inc. has announced a menu-driven tutorial package to train users on IBM's DOS 3 operating system and on the IBM Personal Computer AT's hard disk.

Professor DOS is said to teach users to build an orderly hard disk and to use smart commands and advanced DOS commands such as

Continued on page 122

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MICROCOMPUTERS

Continued from page 121
BACKUP and RESTORE.

The product features interactive lessons on batch files, a dictionary of key terms, reference guides and a technical journal covering additional DOS features.

The program reportedly runs under all DOS versions on a minimum of 128K bytes of memory, one double-sided diskette drive and a monochrome or color display.

Professor DOS is priced at \$59.95. Individual Software, 11651 Chess Drive, Foster City, Calif. 94404.

ANALYTICA CORP.

Reflex

Analytics Corp. has introduced its Reflex DOS base software for the IBM Personal Computer.

Reflex reportedly aids in the col-

lection and retrieval of information and provides users with analytic capabilities. Under Reflex, information reportedly can be reviewed in a variety of formats, grouped, summarized and studied for trends and deviations.

The product is said to feature pull-down menus, screen windows and Help screens that can be accessed with a keystroke.

Reflex is priced at \$496.

Analytics, 3155 Kearney St., Fremont, Calif. 94503.

MICROTEL, INC.

Micro-Talker I

Microtel, Inc. has introduced its Micro-Talker I, a voice mail system for the IBM Personal Computer XT.

Micro-Talker I reportedly allows up to 30 users to interface with the

system from any Touch-Tone telephone. Voice prompts are said to guide users through the process of leaving and retrieving a message.

Micro-Talker requires a system with 256K bytes of internal storage and a 10M-byte hard disk.

Micro-Talker I is priced at \$406. Microtel, 4th Floor, 40 W. 27th, New York, N.Y. 10011.

RACAL-TELESYSTEMS, INC.

Linkage

Racal-Telesystems, Inc. has introduced Linkage, document translation software for the IBM Personal Computer.

Linkage reportedly translates files between the Micropro International Corp. Wordstar text editing package and IBM, Wang Laboratories, Inc. and certain other brands of word

processing systems.

Under Linkage, a centralized word processing system reportedly can receive Wordstar documents prepared by several remote personal computers. The protocol into which Linkage translates can be transmitted asynchronously over voice-grade telephone lines at 300 or 1,200 bit/sec, according to the vendor.

Linkage is priced at \$600. Racal-Telesystems, 419 N. Michigan Ave., Chicago, Ill. 60611.

STSC, INC.

APL Plus/PC Tools

STSC, Inc. has announced APL Plus/PC Tools, a set of software utilities for the company's APL/PC system application development system that uses the APL programming language.

The product features systems for constructing and using full screen menus and input forms, formatting reports and routing output, the firm said. APL Plus/PC Tools reportedly includes terminal emulation support for IBM 5278 terminals, file transfer capability and APL interfaces.

Other features consist of maintenance and configuration aids for program and work space searching and editing, work space documentation, work space cross-referencing and program and work space comparisons, the vendor said.

The product runs on a Personal Computer with IBM's PC-DOS 2.0 and 256K bytes of random-access memory.

APL Plus/PC Tools costs \$295. STSC, 2115 E. Jefferson St., Rockville, Md. 20852.

MAGNUM GENERAL LTD.

Metapatch

Magnum General Ltd. has introduced Metapatch, hospital management software for clinical, administrative, research and education functions of a psychiatric service.

The package reportedly includes a nine-module master clinical data base derived from a data base developed by Strain & Associates. An activity data base manages patient-related services, and a literature data base gathers data, according to the vendor.

Metapatch runs on IBM's Personal Computer, XT and AT and compatibles with 320K bytes of random-access memory, a 10M-byte hard disk, monitor, printer and an asynchronous serial communications port.

The license fee for a single package is \$6,500. Licensees receive the software, users manual, and the Metapatch data base manager with hardware lock.

Magnum General, 180 N. Michigan Ave., Chicago, Ill. 60601.

OFFICE SOLUTIONS, INC.

Officelink/Wang PC

Office Solutions, Inc. has introduced its Officelink/Wang PC word processor for the IBM Personal Computer.

Officelink/Wang PC is said to allow diskette transfer between the IBM Personal Computer and Wang Laboratories, Inc. Professional computers. It reportedly allows documents created on any IBM Personal Computer to be transferred to a central Wang-based word processing department for further editing.

Continued on page 124

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INFODATA

MICROCOMPUTERS

Continued from page 122

OfficeLink/Wang PC costs \$196.
Office Substation, 5708 Odessa
Road, Madison, Wis. 53719.

CONTROL DATA CORP.

Stratagem Simulation Model; Drill and Practice Lesson Model

Control Data Corp. has announced two training aids for its Plato computer-based training author system that runs on the IBM Personal Computer: Stratagem Simulation Model (SSM) and Drill and Practice Lesson Model (DPLM).

SSM enables users to design interactive training software that simulates business situations, according to the vendor. The product reportedly features menu-driven prompts and context-sensitive help screens.

DPLM allows training professionals with no computer experience to create interactive drill and practice courseware for the Plato system, the vendor said.

SSM costs \$3,000 for a one-time license fee; a one-time DPLM license fee sells for \$1,500. Reusable student disks are available for \$25 each.

CDC, P.O. Box 0, 8100 34th Ave., Minneapolis, Minn. 55417.

MANAGEMENT CONTROL SYSTEMS, INC.

Audit Advantage

Management Control Systems, Inc. has announced Audit Advantage, an auditing software for the IBM Personal Computer, Personal Computer XT, Personal Computer AT and Compat-

Computer Corp. microcomputers.

Audit Advantage is said to process annual, semiannual, trimester and quarterly audits. It includes six levels of operator password security, the vendor said. The product allows accountants to print or view financials on the CRT screen, automatically prepare analytical reviews using predefined and user-defined business ratios and produce draft financial statements, the vendor said.

Minimum system requirements are a 256K-byte main memory and a 10M-byte fixed disk.

The price of Audit Advantage is \$3,000, the vendor said.

Management Control Systems, 8701 Buffalo Ave., Niagara Falls, N.Y. 14304.

EDEN PRESS

Privacode

The Eden Press has introduced Privacode, file encryption software for the IBM Personal Computer.

Privacode reportedly is compatible with such programs as Lotus Development Corp.'s 1-2-3, Ashton-Tate's Base II and Micropro International Corp.'s Wordstar. It also encrypts files developed using those programs.

Privacode also includes a security module that automatically erases the source version of a file when the file is translated from clear text to secured versions, according to the vendor.

Privacode is priced at \$396.

Eden Press, P.O. Box 8410, Fountain Valley, Calif. 92728.

MICRO MRP, INC.

MAX, the Production Manager

Micro MRP, Inc. has announced that its inventory control and planning software is available for an IBM Personal Computer AT with a hard disk and the IBM's PC-DOS 3.0 operating system.

MAX, the Production Manager is a manufacturing resource planning system consisting of six modules that provide bill of materials control, inventory control, master scheduling, materials requirement planning, purchasing control and shop floor control.

The price of MAX is \$16,000.

Micro MRP, 1085 E. Hilldale Blvd., Foster City, Calif. 94404.

UNIPLEX INTEGRATION SYSTEMS

Uniplink II

Uniplex Integration Systems has announced an integrated applications software package for stand-alone or multiuser AT/AT Unix-based micro and minicomputer systems.

The system includes a word processor, spreadsheet package and relational data base management system. Features include a menu system, screen builder, job function definer, print spooler, electronic mail and an application generator, according to the vendor.

Price of the Uniplink II software system ranges from \$500 for the Atos Computer Systems, Inc. Atos 596 to \$4,000 for the Digital Equipment Corp. VAX-11/780.

Uniplink Integration Systems, Suite 500, No. One Galleria Tower, 13835 Noel Road, Dallas, Texas 75240.

INFOCENTER SOFTWARE

Link for 2870-PC

Infocenter Software has announced that its Link, micro-mainframe formatter can be used with the recently enhanced IBM Application Program Interface (API) for the IBM 2870 Personal Computer.

Link can download, upload and cross-load files between information center products running on IBM mainframes and data base or spreadsheet applications on IBM Personal Computers. API will allow steps of a data conversion process to be automated so that Link procedures will appear transparent, the company said. Downloading procedures can then be accomplished with a single command, the vendor said.

Base price of the mainframe Link module is \$12,500 for a configuration of 10 Personal Computers.

Infocenter Software, 171 Main St., New Paltz, N.Y. 12561.

U.S. DATA CORP.

Factory Link; Plexus Industrial Operator Station enhancements

U.S. Data Corp. has announced Factory Link, software that provides programmable controller communications and electronic spreadsheet interfacing between IBM 5551 computers and IBM Personal Computer XTs.

Continued on page 126

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Continued from page 134
running IBM's PC-DOS operating system.

The package reportedly allows bidirectional communications between the programmable controller and the industrial personal computer. The package allows users to access data from programmable controllers and generate reports and graphics using microcomputer packages, such as Lotus Development Corp.'s 1-2-3 or Symphony.

Fill-in-the-blank instructional displays allow communications tool setup and programmable controller summary access. U.S. Data has also announced enhancements to its Flexus Industrial Operator Station's operating system software.

The enhancements include a block transfer mode and a polled protocol feature.

Factory Link costs \$2,900. U.S. Data, 1551 Glenview Drive, Richardson, Texas 75083.

LANTECH SYSTEMS, INC.
Tool Kit

Lantech Systems, Inc. has introduced a software development tool kit for the IBM Personal Computer.

Called Tool Kit, the software reportedly provides a choice of text editors, a terminal emulator and networking capability. The Tool Kit also provides a choice of three editors: the Bell Editor, VI Editor and ED Editor, the firm said.

Tool Kit also reportedly includes Lantech's Unix, the Unix-compatible multi-tasking operating system.

Tool Kit is priced at \$400. Lantech Systems, 2635 Woodwell Road, Dallas, Texas 75245.

MICROCRIM, INC.
Enhanced Clout

Microcrim, Inc. has announced an enhanced version of its Clout natural language query designed to work with files from software programs such as Lotus Development Corp.'s 1-2-3, Ashton-Tate's dBase II and Software Publishing Corp.'s PFS-File.

Enhanced Clout also works with Data Interchange Format files, Syllk files from Microsoft Corp.'s Multibase and mainframe Ascl files, Microcrim said.

Clout's relational ability is said to merge and cross-reference information from different files and automatically scan up to 40 files and join up to five files to answer a question.

Clout requires a minimum of 256K bytes of memory and either IBM's PC-DOS or Microsoft's MS-DOS operating systems.

The price for Clout is \$249.

Microcrim, 3380 146th Place S.E., Bellevue, Wash. 98007.

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Personal computers have become a valuable asset in business. The problem is that most personal computer systems are originally sold with "personal printers"...printers built for home use, not for heavier business work.

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The 3014-3024 models print 132 columns. The 3304 and 3404

models give you a full 136 column width, and offer color printing as well.

Each printer is easy to use, lightweight, functionally styled and attractive. And you can choose options from pedestals and paper racks to document inserters, sheet feeders and RK character buffer expansion, plus more.

Genicom 3000 PC printers feature switch selectable hardware, dual connectors and dual parallel or serial interfaces. Plus the 3014 and 3024 emulate popular protocols for both Epson MX with GRAFTRAX-PLUS™ and Okidata Microline 84 Step 2™, while the 3304 and 3404 emulate popular protocols for Epson MX with GRAFTRAX-PLUS™. So your current system is most likely already capable of working with these Genicom printers without modification.

Most important, the Genicom 3000 PC printers are quality-built, highly durable printers designed for rapid, continuous duty cycle printing. So take some personal advice. Get a Genicom professional printer for your personal computer today.

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SYSTEMS

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Access

General Data Security Systems, a subsidiary of General Security Systems, Inc., has introduced its Computer Intelligence Access data security software system for the IBM Personal Computer and Personal Computer XT.

Computer Intelligence Access reportedly offers program and file protection and confidentiality of information. A multilevel password access feature is said to allow the system administrator to delegate files to users.

Also included are a protection system that prevents any user from erasing or deleting a protected file and an updated inventory list of all files, according to the vendor.

Continued on page 138

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MICROCOMPUTERS

Continued from page 126

Computer Intelligence Access requires 256K bytes of random-access memory and is priced at \$300.

General Data Security Systems, 1127 Loma Ave., Long Beach, Calif. 90804.

APPLIED DATA SYSTEMS, INC. Vectroscan enhancements

Applied Data Systems, Inc. has introduced a series of enhancements to its Vectroscan 512 color graphics system.

The Vectroscan 512, reportedly now offers memory expansion from 128K bytes to 512K bytes; a business graphics package, providing line, pie and bar charts; and a long-persistence color monitor.

The color monitor is priced at \$800. The memory expansion option is priced at \$400. The business graphics reporting package is priced at \$450.

Applied Data Systems, Suite 213, 9811 Mullard Drive, Laurel, Md. 20708.

COMPUPRO SYSTEMS, INC. Compupro 10 Plus

Compupro Systems, Inc. has introduced the Compupro 10 Plus, a low-end addition to its line of multiuser business systems.

The Compupro 10 Plus is said to be a four-user microcomputer with such features as concurrent execution of both 8- and 16-bit software and networking capabilities. The Compu-

pro 10 Plus uses the Digital Research, Inc. Concurrent CP/M 8/16 operating system and is said to come bundled with a word processing program that resembles Micropro International Corp.'s Wordstar.

The Compupro 10 Plus is priced at \$4,995.

Compupro, 3506 Breakwater Court, Hayward, Calif. 94545.

COMMUNICATIONS

ZEDEM COMMUNICATIONS Zetem EMPC-VT100

Zetem Communications, a division of KEA Systems, Ltd., has introduced its emulator of the Digital Equipment Corp. VT100 terminal for use with the IBM Personal Computer and the Zenith Data Systems, Inc. personal computer series.

The product, the Zetem EMPC-VT100, reportedly is available in speeds from 45.8K bit/sec to 38.4K bit/sec and supports both DEC VT52 and VT100 escape sequences, shifted and alternate keypad mode. All DEC VT52 and VT100 cursor-related functions, including application cursor keys, erasing and editing, scrolling regions, printer status, printer controller and print screen sequences, are also supported, according to the vendor.

The product is priced at \$150, the vendor said.

Zetem Communications, KEA Systems, 511-511 Beach Ave., Vancouver, British Columbia V6Z 2B5.

INNOVATIVE ELECTRONICS, INC. PC-80

Innovative Electronics, Inc. has announced PC-80, a communications board for the IBM Personal Computer.

The product uses an IBM Type A coaxial connection to attach a Personal Computer to an IBM 3274 or 3276 cluster controller or 4331 display or printer adapter, according to the vendor. PC-80 reportedly supports Binary Synchronous Communications or Systems Network Architecture/Synchronous Data Link Control communications protocols.

The product features dual-level password security, concurrent microcomputer and mainframe sessions, configurable Help screen and screen capture facility, innovative Electronics said.

PC-80 costs \$895.

Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

AMBI CORP. Ambimail

Ambi Corp. has introduced its Ambimail electronic mail software for its Ambimail workstation.

The Ambimail system reportedly allows Ambi products to send and receive text messages with a single keystroke, communicate voice, data and text in unattended operation and transmit information to multiple ad-

dresses on a variety of distribution lists stored in memory.

Ambimail is said to offer point-to-point and point-to-multipoint messaging and to integrate with the clock/calendar of Ambi workstations, allowing them to send and receive messages while unattended.

Ambimail is priced at \$300.

Ambi, 2085 Washington Blvd., Stamford, Conn. 06901.

WATERLOO MICROSYSTEMS, INC. Waterloo Port

Waterloo Microsystems, Inc. has introduced Waterloo Port, an operating system that reportedly provides multitasking and networking to the IBM Personal Computer, Zenith Data Systems Corp. 150 and 160, and Compaq Computer Corp. Compaq personal computers.

Waterloo Port reportedly features concurrent activities, a mouse-driven user interface, integrated local-area networking and the use of IBM's PC-DOS as a concurrent activity.

The product is also said to offer a hierarchical tree-structured file system, a set of editing and formatting tools, an environment for developing systems and application software and an interprocess, message-passing system architecture.

Waterloo Port Version 2.1 reportedly includes a network interface board and documentation. It is priced

Continued on page 130

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MICROCOMPUTERS

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at \$615 in its stand-alone version. A one-network server version costs \$1,540.

Waterloo Microsystems, 178 Columbia St. W., Waterloo, Ont., Canada N2L 5Z5.

GRANADA SYSTEMS DESIGN, INC.

PC/Shell

Granada Systems Design, Inc., has announced a software and hardware package that allows the IBM Personal Computer to act as a protocol translator that will transmit information from asynchronous devices to IBM System/34, 36 and 58 users.

PC/Synchronous/Asynchronous Interactive Link (Shell) reportedly uses the Personal Computer and an IBM 5251 Model 12 synchronous protocol to communicate between asynchronous devices and IBM systems.

The product, which consists of two micro hardware boards and a software diskette, sells for \$1,650.

Granada Systems Design, 303 FVA Ave., New York, N.Y. 10016.

PRINTERS/PLOTTERS/PERIPHERALS

PRINTRIX, INC.

Model 930

Printrix, Inc. has announced a series of options for its Model 930, a 200 char/sec dot matrix printer.

The options include several new

fonts, memory expansion and print buffer. The fonts consist of pica/pica italic, elite/elite italic, courier/courier italic and optical character recognition Anal (OCRA) and optical character recognition International Standards Institute (OCRBI).

The fonts are priced at \$99 each, except for the OCRA and OCRBI fonts, which cost \$49.

A memory expansion board, which supports all new fonts and fonts downloaded from a larger computer, costs \$99. A 6K-byte print buffer costs \$149.

Printrix, 1517 Thurlstone Road, Benton Harbor, Mich. 49002.

BOARD-LEVEL DEVICES

TSENG LABORATORIES, INC.

Colorpak

Tseng Laboratories, Inc. has announced Colorpak, a color graphics board for the IBM Personal Computer.

According to Tseng Laboratories, Colorpak provides 640- by 400-pixel four-color resolution and it also supports 80-char. by 50-line displays.

In conjunction with the IBM color monitor, the product reportedly supplies 640- by 200-pixel resolution or 320- by 200-pixel resolution on an 80-char. by 25-line display.

The color graphics board product includes Grafix Partner, a graphics enhancement program that reportedly improves the graphics for Lotus Development Corp.'s 1-2-3. Grafix

Partner runs in background and can be accessed by a single keystroke, Tseng Laboratories said.

The price of the Colorpak color graphics board is \$650.

Tseng Laboratories, 805 Phoenician Run, Newtown, Pa. 18940.

SKY COMPUTERS, INC.

SKY330

Sky Computers, Inc. has introduced an arithmetic and I/O coprocessor for the IBM Personal Computer based on the Texas Instruments, Inc. TMS 320 processor.

The SKY330 coprocessor is said to be a single add-in board with up to 128K-bytes of 120 nsec four-ported memory.

The SKY330 performs arithmetic at up to 5 million operation/sec, using overlapped additions and multiplications, according to the vendor.

The coprocessor reportedly can be accessed from the Personal Computer, the TMS320 and two auxiliary 16-bit I/O ports operating independently of the Personal Computer's 8-bit bus.

The SKY330 is priced at \$2,995. **Sky Computers, P.O. of John St., Lowell, Mass. 01852.**

SIGMA INFORMATION SYSTEMS, INC.

PC-128

Sigma Information Systems, Inc. has introduced its PC-128 motherboard, a product said to be fully hardware- and software-compatible with the IBM Personal Computer XT. The PC-128 reportedly offers

128K bytes of internal memory and a 16-bit Intel Corp. 8086 CPU that can address up to 64K bytes of system memory. Its eight I/O interface slots are said to be IBM-compatible and able to support IBM disk controllers, multifunction boards and modems.

The PC-128 also is said to include eight expanded read-only memory (ROM) sockets for use with either eight 8K-bytes or eight 16K-bytes erasable programmable ROM chips. It also reportedly includes a speaker port.

PC-128 is priced at \$585. **Sigma Information Systems, 3401 E. LaPalma Ave., Anaheim, Calif. 92606.**

REMOTE SYSTEMS, INC.

Secureware III

Remote Systems, Inc. has introduced Secureware III, a security system for the IBM Personal Computer and Personal Computer XT.

Secureware III is mounted into a card slot in the computer and is addressed by the processor as an I/O device.

It reportedly reduces the potential for software diskette piracy and can be programmed to work with hard-disk-based systems.

In a network, Secureware III is said to offer data file security and a reliable method of user validation for access to a host computer.

Secureware III is priced at \$196, the vendor said.

Remote Systems, 38 Cosmos Court, Gaitherburg, Md. 20879.

See BOARD page 132

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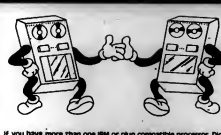
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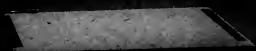
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MICROCOMPUTERS

BOARD from page 130**AST RESEARCH, INC.**
Advantage

AST Research, Inc. has introduced Advantage, a multi-function memory expansion board designed for the IBM Personal Computer AT.

Advantage allows a user to work with up to 3M bytes of random-access memory and takes advantage of the AT's high-performance bus, AST Research said. The board reportedly works with either 64K-bit or 256K-bit chips. Advantage is said to offer an IBM-compatible parallel printer port, two serial ports and a game port.

Advantage costs \$495.

AST Research, 2121 Alton Ave., Irvine, Calif. 92714.

WAVE MATE, INC.
Bullet-286

Wave Mate, Inc. has introduced its Bullet-286 motherboard for the IBM Personal Computer XT. The product is said to incorporate the Intel Corp. 80286 microprocessor while maintaining IBM compatibility.

The Bullet-286 reportedly has the same dimensions and physical connections as the Personal Computer XT motherboard and provides up to 640K bytes of on-board memory with zero wait states. According to Wave Mate, the product uses virtual machine emulation to resolve the Intel Corp. 80286/Intel 8088 compatibility problems.

Virtual machine concepts are said to permit Personal Computer XT application and system programs to be treated as black box object-code modules, which require no modification to achieve Intel 8086 functionality.

The Bullet-286 is available in 256K-byte, 512K-byte and 1M-byte models, priced from \$1,995 to \$3,395.

Wave Mate, 14009 S. Crosshairs, Hawthorne, Calif. 90250.

QUADRAM CORP.
Palette Master

Quadram Corp. has unveiled Palette Master, a high-resolution graphics adapter for IBM's Personal Computer.

Palette Master reportedly can display 256 from 256,000 possible colors on the screen, Quadram said. The product is said to feature 64K bytes of memory and 320- by 200-pixel resolution.

Palette Master reportedly allows a user to store, transmit, recall and manipulate photographic-quality images. The product is compatible with software written for the IBM Personal Computer color graphics adapter.

Palette Master costs \$695.

Quadram, 4555 International Blvd., Norcross, Ga. 30093.

INTELLUTION, INC.
Epron for IBM Personal Computer

Intellution, Inc. has announced a graphics character erasable programmable read-only memory (Epron) product for the IBM Personal Computer.

The product plugs into an IBM Personal Computer color graphics board and provides 86 graphics symbols including valve bodies, valve actuators, motors, pumps, corners,

transmitters, ladder diagram symbols, bar graphs and process vessels, according to the vendor.

The product costs \$70, the vendor said.

Intellution, Suite F, 35 Perwood St., Westwood, Mass. 08090.

SEATTLE TELECOM & DATA, INC.
Model PC-286

Seattle Telecom & Data, Inc. has introduced an add-in

processor board for IBM Personal Computers that reportedly can increase the processing speed of the Personal Computer and Personal Computer XT by 10 times.

The PC-286 reportedly takes over the Personal Computer bus completely, generating all Intel 8086 timing internally and running software without the need for special software disks, input and output port address switches or jumpers.

The PC-286 can run at 4, 6

or 8 MHz, permitting it to be tailored to scientific and engineering applications, the vendor said. Additionally, the PC-286 CPU, its on-board expansion connector and IBM Personal Computer bus all are said to have independent access to the board's main memory.

The PC-286, with 256K bytes of random-access memory, is priced at \$3,395.

Seattle Telecom & Data, 2637 151st Place N.E., Redmond, Wash. 98052.



MICROCOMPUTERS

DIGIGRAPHIC SYSTEMS CORP.
Com-8 board

Digigraphic Systems Corp. has introduced its Com-8 multi-channel communications board for the IBM Personal Computer AT and other IBM Personal Computers.

The Com-8 board fits into an expansion slot on the Personal Computer's chassis and adds eight individually addressable serial ports. It also allows Com-8 boards to be

chained together to enable a system to support as many terminals as permitted by the computer's memory.

The Com-8 board is \$639. Digigraphic Systems, 10873 Yellow Circle, Minneapolis, Minn. 55434.

INTELLIGENT TECHNOLOGIES INTERNATIONAL CORP.
Coax Exchange graphics option

Intelligent Technologies

International Corp. has added a graphics option to Coax Exchange, a communications board for the IBM Personal Computer line.

With the option, a Personal Computer reportedly can emulate an IBM 3279 Model 850 color graphics terminal. The microcomputer can then emulate all 3279 text and graphics display modes, with color quality, screen painting, image aspect ratio and 780- by 840-pixel resolution.

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BLUE from page 119

York.

However, Weiss, agreed with James Reinde, analyst with Dataquest, Inc. in San Jose, Calif., that the introductions do not address some major incompatibility issues among low-end IBM software.

Among other items in the flood of Oct. 25 announcements, the main enhancements to the Personal Computer/370 series included the

new Personal Computer AT/370, 3278 (rather than 3277) terminal emulation as standard and a new release of the VM/PC system software.

Experts noted that the new AT/370 is a logical step up from the Personal Computer XT/370, with greater processing and memory capabilities. But several analysts described the target market for both machines as very small.

New control programs for the 3270 Personal Computer, which also made their debut Oct. 25, included application program interface services that reportedly will enhance communications between Personal Computer and host sessions. The services also will "automate, customize and simplify many functions that were previously available only through operator procedures," according to IBM.

Simplifying the user interface would help to overcome one major handicap for the 3270 Personal Computer, whose sales "are off to a slow start," Weiss said. His firm's surveys found two remaining marketing obstacles: pricing and the requirement for a 3274 controller with four ports.

When users compared the 3270 Personal Computer with a standard Personal Computer with a standard Personal Computer with 3270 emulation option, "in more cases than not they felt they were not getting that much more with the 3270 (Personal Computer)," Weiss said. The demand for multiple host sessions "was the critical criterion justifying the additional cost of the 3270 Personal Computer," he said.

ADAPT from page 119

an organizational, not an individual, problem.

Automation's Slump

In many ways the manager's complaint is similar to those heard on the production line when factory automation comes through the door.

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Very frequently the changes that are imposed by office automation for managers and professionals raise the issue of perceived status.

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MICROCOMPUTERS

Continued from page 128

according to the vendor. A single keystroke is said to allow a user to toggle between microcomputer and mainframe sessions.

The graphics option costs \$1,306, and the Coax Exchange sells for \$1,196.

Inteligent Technologies International, 151 University Ave., Palo Alto, Calif. 94301.

EMULEX CORP.

PC/Memory Plus Clock; PC/Short Memory

Emulex Corp. has introduced its PC/Memory Plus Clock board and its PC/Short Memory board for the IBM Personal Computer line.

The PC/Memory Plus Clock is said to be a full-size, multifunction circuit board capable of supporting up to 576K bytes of socketed random-access memory in a single Personal Computer slot. It automatically stamps users' files with the time and date and features an on-board five-year battery, Emulex said.

The PC/Short Memory Board is available in five increments of 64K bytes each and fits into the short memory slot of the Personal Computer XT or Portable Personal Computer.

The PC/Memory Plus Clock is priced at \$345 in its basic 64K-byte version. Prices range up to \$1,145 for the 576K-byte version. The PC/Short Memory board is priced from \$259 for the 64K-byte version to \$769 for the 384K-byte board.

Emulex, P.O. 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

2000 from page 119

three different documents or use the windows to display information from a variety of spreadsheet programs.

■ **Calculator.** Users can perform calculations within documents while editing, using Wordstar 2000's math option.

The 2000 software line also includes proportional spacing, printer support for more than 100 printer models; a typewriter mode for addressing envelopes and filling out forms directly from the computer keyboard; spelling correction, which corrects misspellings and typographical errors and provides phonetic correction; sorting; and automatic paragraph reformatting, the firm said.

Wordstar 2000 Plus contains all the features of Wordstar 2000 as well as telecommunications capabilities, a mailing list data base and an indexing system, Micropro said.

The 2000 line will be shipped in late November and will be available for the IBM Personal Computer, Personal Computer XT, Personal Computer AT and fully compatible systems under IBM's PC-DOS 2.0, 2.1 and 3.0. The program requires 256K bytes of random-access memory (320K bytes for PC-DOS 3.0 and the AT). The company recommends the use of a hard disk drive.

The Wordstar line includes a copy protection scheme that allows users to make three copies of the program. According to Micropro, the copy protection will be transparent to users with hard disk drives, while users with floppy-disk-based systems will

be required to load in a program disk each time they use Wordstar 2000.

Wordstar 2000 costs \$495 and Wordstar 2000 Plus is priced at \$596.

Upgrades are available for current users at a cost of \$260 for Wordstar 2000 or \$360 for Wordstar 2000 Plus. Micropro President H. Glen Haney emphasized the fact that the company will continue to support and enhance the original Wordstar as part of a two-pronged attack on the word processing market. "We want to crowd out all the competition at the low end and block out the competition at the top," he said.

In general, analysts agreed that Micropro has addressed many of the shortcomings of the original Wordstar and added features that will be welcomed by users.

Robert Lefkowitz, a software analyst with Infocorp, a Cupertino, Calif.-based market research firm, said that in designing Wordstar 2000, Micropro "has been as successful as anyone can be at solving two problems that work against each other: providing full functionality as well as ease of use."

Bonnie Digrius, a software analyst with Cupertino, Calif.-based Creative Strategies International, Inc., said the new packages are priced too high.

Digrius also questioned Micropro's claim that the new software line will appeal to a wide variety of users — from the executive who has limited word processing needs to the professional whose needs are extensive.

For more information, Micropro International is at 35 San Pablo Ave., San Rafael, Calif. 94903.

GEM from page 119

standing operation under future operating system offerings.

GEM will require 256K bytes of random-access memory, two floppy disk drives, a bit-mapped display, a mouse and MS-DOS 3.0 or later. Including MS-DOS applications will run under GEM without any changes in performance, Digital Research said.

A GEM programmer's toolkit for the IBM Personal Computer will be sold to software developers in the first quarter of 1985, priced in the \$500 range, Digital Research said.


The supplier suggested that Macintosh software developers will use GEM as an easy way to port packages into the MS-DOS environment.

DRJ also introduced the first GEM software application, GEM Desktop, said to eliminate the need for MS-DOS commands. The screen shows a graphics representation of a desktop with icons and windows, and all commands can be achieved by pointing and selecting with a mouse, DRJ said.

Up to six desk accessories (such as a calculator) fit within Desktop. An GEM package, GEM Desktop is scheduled for first-quarter 1985 shipment.

The company also is slated to announce several GEM presentation graphics products. Among these, the GEM Draw and GEM Wordchart application software packages will be priced in the \$300 range and will be shipped in the first quarter of 1985, Digital Research said.

Digital Research is located at 60 Garden Court, Monterey, Calif. 93942.



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COMPUTER INDUSTRY

Prime chief sees 'sharp focus' as key

By Peter Bartolotta
CW Staff

NATICK, Mass. — Three years ago next month, Prime Computer, Inc. named as its president a former IBM vice-president, Joe M. Benson. This filled a five-month void created by the sudden departure of former President Kenneth G. Fisher, who had groomed the 32-bit superminicomputer vendor from practically start-up level to annual revenues in excess of \$300 million.

The trade of a charismatic, hard-charging Fisher for someone mentioned in the conservative style of Big Blue was expected to result in cultural changes at a relatively small company that had soared on annual sales increases of 75%.

Changes there were. Newly appointed Benson wanted a more mature organization geared toward long-term growth and prosperity. Following the typical pattern of IBM personnel tapped to head other companies, he brought in a cadre of fellow IBM employees to bring the or-

ganization into line. He increased research and development spending, which, combined with shortfalls in revenue, produced a profit decline from \$44.9 million in 1982 to \$32.5 million in 1983. Topping things off, Fisher announced the formation of Encore Computer Corp. in mid-1983 and tapped three Prime vice-presidents and three mid-level managers, which compounded a vast exodus among management ranks.

The departure of people who had grown with the company, the imposition of a broad-based strategy on a relatively small, specialized company and the erroneous revenue forecasts for the first two quarters of last year all combined to generate an impression in some quarters that Prime had run out of steam after milking its initial 32-bit technology to the limit.

But over the past year, in an understated manner, Prime introduced a series of new machines, extending its line upward to claim a share of the price/performance peak in the supermini industry prior to the

announcement of Digital Equipment Corp.'s VAX 8500, code-named Venns, filling out the middle of the line with new boxes and bringing out a generally well-received low-end machine and microprocessor-based workstations. Despite its claim to one of the youngest product lines in the industry, the company has until now not funded an aggressive marketing program, preferring instead to bring its profits back into line.

Gale Aguilar, vice-president of corporate business development and strategy, was brought in from IBM and, like Benson, served more than two decades with the No. 1 computer company. Aguilar said in a recent interview that Prime had to undergo change because other vendors had climbed into the 32-bit market, and Prime needed "to turn this event into a process."

"I don't know that that had anything to do with people," he added. "I'm not sure that [Benson], being here earlier, wouldn't have gone through it, or Fisher, staying longer... wouldn't have gone through the

See PRIME page 136

■ Franklin Computer Corp. said it will liquidate its assets to settle with creditors under a Chapter 11 bankruptcy reorganization/130

■ Digital Equipment Corp. President Kenneth Olsen told an annual meeting audience that the No. 2 computer maker has put the problems of last year behind it/130

■ An Wang, founder, board chairman and chief executive officer of Wang Laboratories, Inc., was awarded the American Electronics Association's highest honor at a ceremony last month/140

ANALYSIS

Foundering U.S. PCMs leaving field to IBM, Japanese

By Peter Bartolotta
and David Olmstead

Yet again, the point is being driven home with brutal finality — climbing into a bed warmed by IBM can be a fatal strategy. The almost sudden collapse of the domestic plug-compatible disk drive industry leaves the huge IBM mainframe community with, effectively, little alternative among vendors.

With Storage Technology Corp. (STC) filing for protection under Chapter 11 of the U.S. Federal Bankruptcy Act just one month after Control Data Corp. announced it was departing the plug-compatible market, IBM mainframe users are left with the unpalatable alternative of

shopping for memory peripherals from either IBM or Japanese competitors.

Yes, Memorex Corp., the Burroughs Corp. subsidiary, has proclaimed it is in the business to stay. But Memorex has experienced the same technological problems that forced CDC out, and the expected introduction of new IBM disk drives next year will add further pressure to Memorex's viability.

Carol Lerner, an analyst with International Data Corp. of Framingham, Mass., was brutally frank about the remaining domestic vendor. "Memorex is just about out of it," she said. "That leaves IBM and the Japanese."

Jonathan Fram, an analyst with Paine Webber, Inc., was not prepared to write

the obituary on Memorex. But, he said, "Memorex" will be a continual drag on [the profits of] Burroughs."

According to Fram, "The Japanese have a willingness to take the long-term view. They are buying up market share at the expense of margins." Hitachi Ltd. and Fujitsu Ltd. stretched to the limit the older ferrite core technology, according to Fram. While the Japanese companies were continuing to increase market share with the older machines, CDC, STC and Memorex all effectively killed sales of older equipment with what turned out to be premature announcements of thin-film head drives.

Now, according to Fram, "Hitachi and See STC page 147

DG breaks through billion-dollar barrier

WESTBORD, Mass. — Data General Corp. topped the \$1 billion revenue barrier for the first time in its history, the company said recently.

DG's revenues for fiscal 1984 were \$1.1 billion, a 40% increase over \$828 million the previous year. Operating income for the year was \$102.6 million, or 9.3% of revenues, compared with \$36.5 million, or 4.4% of revenues, a year earlier.

Profit for the fourth quarter ended Sept. 29 more than doubled to \$20.5 million, or \$1.12 a share, compared with \$10.7 million, or 43 cents a share, for the corresponding period one year earlier.

The company's profit for the latest quarter was aided by a one-time tax benefit of \$12.6 million, or 47 cents a share, resulting from a change in the tax law governing overseas trading.

This year's performance is largely the result of the most ambitious product development effort in the company's history," said Edson D. De Castro, DG president.

Visicorp to merge with Paladin Software

By Kathleen Burton
CW West Coast Bureau

SAN JOSE, Calif. — Visicorp, the Silicon Valley firm that soared to success on sales of the popular Visicalc financial spreadsheet program, announced recently it will merge with Paladin Software Corp., a one-year-old Santa Clara, Calif., software firm.

The two privately held companies will consummate the agreement with the exchange of an undisclosed amount of stock, said Lydia Barnes, a product line manager at Paladin. Paladin, which was founded in October 1983 under the name Optisoft, is presently developing a business software product, Barnes said.

Visicorp's fortunes dipped last year when the company became involved in internal financial problems and a series of lawsuits with Software Arts, Inc. of Boston, which originally developed Visicalc. Sales of Visicorp's major software programs, Visicalc and Visi On, sagged during that time, and Visicorp eventually relinquished Visicalc copyright, trademark and license to Software Arts in an out-of-court settlement.

Over the past several months, Visicorp has been searching for new products and a new management team to replace several key executives who left the company, said Daniel Fylstra, Visicorp's chairman and chief executive officer. The Paladin merger and the separate sale of a Visicorp subsidiary, Communications Solutions, Inc. of San Jose, Calif., to Control Data Corp. of Minneapolis, will infuse Visicorp with a new management team, new business software products and much-needed cash, he said.

According to the agreement, Paladin's president, Roy Folk, formerly a product manager at Visicorp, will head the new company, which will continue to use the Paladin name. Fylstra will relinquish his duties, but will remain on the board of directors, and Richard Nelson, who became a Visicorp director last spring, will be named chairman of the new firm. Fylstra, who took over Visicorp's operations in July when then-president Terry Opendy resigned, would not reveal his plans.

Following the merger, the new company will continue using the name Visi for products that are already on the market, Fylstra said.

COMPUTER INDUSTRY



**JOE M.
HENSON**

Joe M. Henson spent 26 years with IBM, where he rose to the position of vice-president, industry marketing, in the Data Processing Division. On Dec. 1, 1981, he was named president and chief executive officer of Prime Computer, Inc., which had been leaderless since former president Kenneth G. Fisher suddenly resigned earlier in the year. In an interview with Computerworld Senior Editor/Industry Peter Bartolli, Henson spoke of his and the company's transition since 1981 and changes in the industry.

"In IBM, you have a company that has a lot of history and a lot of time in developing its infrastructure, its planning capability, its coordination and integration capability. On the other hand, it is a much larger company, it is slower to make decisions, [it has] many many more levels of management. So there are pluses, and there are minuses. . . . As a matter of fact, I think I'd say the absence of cultural shock was surprising; it was one of the things I was prepared for — that after 25 years at IBM, [it would] be a great big cultural thing, but it wasn't."

"As you would expect under the circumstances, with the prior president having abruptly departed the company and then there being a period of six months when there was no president, there were a lot of transitional, emotional issues. The organization was certainly not stable. . . . So we went through a transitional period where it was necessary for some people to be replaced; some of the individuals who had joined that small start-up company in association with the prior president — as a matter of fact had been recruited from a long-time association with him — weren't interested in working in this company under a new set of management. Some of them made a lot of money and maybe weren't quite as eager to work now; they wanted to enjoy the rewards of their previous effort. So we had to go through all of that. That was a difficult period, but I think we're through all that."

"So it's one thing to have a corporate strategy, a defined market and product direction

you're pursuing, but we have to get the word out to all of the constituencies so that it's manifest and the implementation of it is clear. . . . We have not, until more recent times, invested the money to do that. Well, why haven't we? It's a logical question. Well, why didn't we spend the money? . . . By the time I get here, somebody has a 32-bit minicomputer. So what happens? The gross margin starts eroding; we're in the market for a recession in 40 years; we've got to ramp up the investment in R&D, so we take it from 7.5% to 10.1%; we've got to make that investment of tens of millions of dollars in customer service; we have to expand the sales force; and now, we want to invest money in advertising and sales promotion when we haven't invested in the past. Well, where's all of that going to come from? [How are you going to] maintain your profitability? . . . So where's it going to come from? What we've had to do is reset that economic model. We couldn't do it all at once without impacting the bottom line."

"Sure, I'm threatened by IBM and its size and its muscle. But [the fact remains that] we do have the enormity of the market going for us and the tremendous growth in the departmental level systems — the fastest growing segment of the marketplace, growing much, much faster than the large mainframe marketplace. We're fortunate, on the one hand, to be focused on the very segment of the market that is the fastest growing, that represents a tremendous opportunity for us; it represents a tremendous opportunity for a lot of other people, too, and they can see that."

Prime distinguished by lack of stand-alone micro product

One clear factor distinguishing Prime Computer, Inc. from its traditional competitors in the supermini-computer industry is the lack of a stand-alone microcomputer product, either developed internally or purchased from another company.

According to the company's president, Joe M. Henson, the company realized some factors that perhaps some of its competitors are just now coming to grips with. "I believe if you don't own the technology, and you don't own the sales and service outlets, you really don't control your own destiny," Henson said. "When I looked at the economics of scale, it was obvious to me that [the computer] business was going to be dominated by IBM and the other very, very large-volume players that are already there."

Henson also said, "I don't think a company the size of Prime is going to dominate the personal computer marketplace; that is folly. But we can certainly provide our customers with a capability to integrate workstations more tightly into a Prime network than personal computers acquired from others."

That is not to say the company didn't consider developing such a machine.

Gale Aguilar, vice-president of corporate business development and strategy, said, "We looked at bringing out a so-called [personal computer] some time ago and even put some effort into doing that." He explained that the company wanted to avoid the retail aspects of the micro arena, and concentrate on professional workstations.

"We still fully intend to have microprocessor-based workstations in our product line and, in fact, we do have one of the [Convergent Technologies, Inc.] versions in our office offering right now," Aguilar said.

The company also purchased the rights to the IBM-compatible DOT portable computer produced by Computer Devices, Inc., which has been operating under protection of Chapter 11 of the Federal Bankruptcy Act since last October.

John Maske, vice-president of manufacturing and service, said the company will introduce workstations under a variety of manufacturing scenarios. By the way, "We're not out of manufacturing entirely; we are going to have something about a year and a half from now that might not be workstation size, but closely related to it, that we will develop and manufacture internally."

PRIME from page 135

same thing. It is very hard to separate, in a company growing as fast as we've grown, where these events get triggered by changes in the company and the environment and where they get triggered by changes in people. Or maybe they go together; maybe when your environment changes, the better person to manage changes [with it]."

What is clear is that in the three years since Fisher departed the company, many have revised their perception of what kind of shape he left it in. Fisher was not available for comment, but analysts and current Prime executives now say that the company was overdue for internal change when he left.

"The issue at Prime was that too many people perceived the company incorrectly when Fisher left," according to Jay Stevens of Dean Witter Reynolds, Inc. "Under Fisher, [Prime] did not spend enough on R&D. The product line was mature."

Stephen K. Smith, of Paine Webber, Inc. observed, "One thing Henson has done in the first year or two [is] focus on a number of internal problems. . . . There were far too many levels of management; there were problems with equipment reliability. He's put them right, but it's taken a while."

Henson, while stressing that Prime had been extraordinarily successful, recently conceded, "I found a great number of problems that surprised me. And perhaps they shouldn't

have, perhaps I should have more accurately anticipated those [problems]."

He cited among the problems the absence of a defined corporate strategy; a weakness in internal operational planning; an undertrained, undermanned and inadequate customer service program; and "at least two levels of organization too many" in the sales organization.

Perhaps most crucial was the level of spending on R&D. When Fisher left, according to company statistics, R&D spending was only 7.5% of revenues; Henson raised that to 8.5% in 1982 and 10.1% in 1983. The company is now committed to the 10% level for the long term.

According to Gerald Kokot, senior manager of investor relations and treasurer of Prime, the shortfall anticipated in revenues in the first and second quarters of 1983 was as much a surprise to the company as to Wall Street analysts. Kokot noted that 1982, a recessionary year for companies like DEC and Data General Corp., was a very strong year for Prime, particularly in the fourth quarter.

The company ramped up R&D spending and sales and support expenses based largely on 1982 results, Kokot added, so "we grew at a healthy 16% rate, but we had an expense base that was built up for 25% growth."

Henson added, "What we had to do was reset the economic model; we couldn't do it all at once without impacting the bottom line. We took pride in the fact that net operating



Aguilar

COMPUTER INDUSTRY

margins were still relatively high during 1983 in comparison to competitors. Much of the 1983 problems resulted from new models introduced by competitors and greater price pressure from that competition. Henson said the company misjudged the pace of the economic recovery and wishes it could have more accurately prepared for the earnings dip. "But I wouldn't have changed the investment process; I think it was crucial," he declared.

Those investments began to pay off last year and this year, with the introduction of the high-end 9950, which, prior to announcement of DEC's latest high-end machine, Prime claimed was the top price/performance machine when evaluated in transactions processed in the multiuser, multifunction environment to which it caters. Since DEC's announcement, Prime spokesmen said the new VAX was not unexpected and does not deter Prime's own development plans. Dean Whittier's Stevens said, "I think next year Prime will bring out a comparable machine to the Venus introduced by DEC."

Prime also took comfort from the fact that DEC's latest VAX model uses emitter-coupled logic (ECL) emission factors, as opposed to Shottky transistor-transistor logic gate arrays. Prime led the way in this area with an ECL-based 9950 and mid-range 9750. The company also touts its Prime operating system that runs on all equipment from the high to low end.

One area the company has stayed out of is the micro-computer arena (see story page 136). Henson and the other officers said they made a conscious decision to stay away from the commodity micro market. But the company was also relatively late bringing out workstation products to work with its superminis. John Maske, vice-president of manufacturing and service, said the company recognizes it is late in that area, "but we don't think the parade has passed us by." Prime has been selling a Convergent Technologies, Inc. workstation under the Prime label and is committed to more.

Although the company in its first decade made its success based on pushing good machines out the door, the focus under Henson is now to identify key market areas where the company can establish itself as a total solutions system provider. A decision made prior to Henson's arrival was to focus on the office automation area, but the company stubbed its toe when software it purchased proved to have problems that effectively killed that strategy.

Now, the goal in the office automation arena is to pro-

vide a general-purpose system with word processing and electronic mail capabilities, along with the communications capabilities provided by Prime's Ringnet and Primenet networks. "Our view is that word processing and office automation are generic capabilities of any general purpose computer," Henson said.

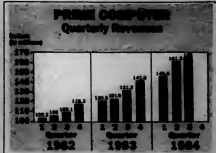
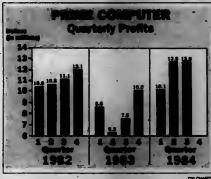
Where OA has been discounted as an overall strategy, the company's goals in the area of computer-aided design and manufacturing (CAD/CAM) are stronger than ever. According to Paine Webber's Smith, "With CAD/CAM, [Prime's] done a good job, but it's a very competitive business, and it has to pay close attention."

The other part of Henson's "sharply focused strategy" is to target the distributed

data processing market aggressively. Henson said the company protects users' investment in software by maintaining one operating system for the entire product line. But the company is also intent on abiding by industry standards and is working to make Primos core-level with AT&T's Unix, should that evolve into the standard that has been predicted.

Despite the problems of 1983, Prime expects a record earnings year for 1984. Henson said he believes Prime is well positioned for the future.

"We've been embracing new technologies more aggressively. We took a long look and prioritized our development activities to focus more toward high-growth-margin, high-end products than we did toward the low end."



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COMPUTER INDUSTRY

Franklin to free assets in effort to settle with creditors

Legal battles with Apple placed New Jersey-based manufacturer in financial straits

PENNSAUKEN, N.J. — Franklin Computer Corp., the personal computer manufacturer that filed Chapter 11 bankruptcy proceedings in June [CW, 7/2], recently said it will liquidate its assets to settle with creditors.

In a reorganization plan filed with U.S. Bankruptcy Court in Philadelphia, Franklin outlined its plans to liquidate its assets, a court spokeswoman said last week. For the past several years, Franklin has been troubled by legal battles with Apple Computer, Inc. involving software copyright infringement. In January, Franklin agreed to pay Apple \$2.5 million and promised to cease marketing some of its products.

But the suit put heavy financial strains on the company. In bankruptcy papers filed last summer, Franklin listed assets of \$33.9 million and liabilities

of \$32.5 million. Three of the company's five largest, unsecured creditors are computer companies, including Texas Instruments, Inc., Key Tronic Corp. and Apple. Franklin also owes \$4.9 million to its largest secured creditor, National Westminster Bank USA.

This summer the company laid off 160 of 375 employees. Two months ago, the company shifted to a four-day work week.

Marvin Krasny, counsel for the bankrupt company, told Computerworld that Franklin will take between six months and a year to liquidate and give the proceeds to its creditors. After that time, he said, it is expected the company will be out of business.

Limited manufacturing will continue in order to convert some of the firm's existing parts into finished inventory, he noted.

Assets and inventory have been written down since the company filed for protection, and current assets are listed at about \$15 million, Krasny said.

A question remains as to whether some of the company's intangible assets will be leased or sold.

The reason for the six- to 12-month liquidation period is because the company is "trying to get top dollar," for the assets, Krasny said. "We are not going to sell them off under a hammer at an auction," he said.

Morton David, Franklin chairman and chief executive officer, also announced that former Vice-President Michael Strange was appointed president of the company, succeeding Joel Shusterman, a Franklin founder who returned to the company after the May resignation of H. Barry Borden.

Sperry forms AI center, inks joint parts

By Charles Blakeslee
Of New York Bureau

NEW YORK — Sperry Corp. has consolidated its artificial intelligence and expert systems activity into a Knowledge Systems Center in Minneapolis and has signed letters of intent with two other companies for joint AI efforts.

Both moves are needed for Sperry "to move artificial intelligence technology out of the laboratories and into commercially viable applications," Sperry's Executive Vice-President Joseph J. Kroger said at the company's advanced technology symposium recently held in New York.

New York-based Sperry plans to team up with Texas Instruments, Inc. of Dallas to produce specialized processors for Lisp, AT&T's Unix and new man-machine interfaces. It will also offer TT's Explorer and other artificial-intelligence-based products, Kroger said.

Explorer, announced earlier this year, is an AI development environment supplied with separate communicating processor boards designed to support the Unix operating system and symbolic processing.

Sperry also plans to distribute jointly the Knowledge Engineering Environment software system produced by Intelliproc of Menlo Park, Calif., and use the system itself in developing expert-systems-based products, Kroger added.

Unsettled operational problems

Sperry programs will address operational problems in manufacturing, financial services and energy industries as well as federal and local government applications, he said.

The \$20 million Knowledge Systems Center will combine Sperry's four electronics-based business units: Information Systems Group in Blue Bell, Pa.; Defense Products Group in Eagan, Minn.; Systems Management Group in Great Neck, N.Y.; and Aerospace and Marine Group in Phoenix.

The center will be under the direction of Larry L. Walker, former director of interconnect and marketing strategies.

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COMPUTER INDUSTRY

VAX 8600 predicted to fuel DEC's revenue rebound

By David Glaser
CW Staff

BOSTON — One day after the long-awaited announcement of Digital Equipment Corp.'s high-end superminicomputer, the VAX 8600, DEC President Kenneth H. Olsen asserted that his company has put its problems behind it and is gathering momentum.

"A year ago, we had trouble explaining what we were going to do," Olsen told shareholders, analysts and other attendees at DEC's Nov. 1 annual meeting here. He was referring to last year's meeting during which the company announced a staggering 75% drop in first-quarter earnings that baffled shareholders.

"We have forgotten about that," Olsen said of the first quarter of 1983. "The basic problems we generated for that first quarter are not with us [any longer]."

In contrast to a year ago, Olsen could enjoy some good news. The VAX 8600 announcement, he said, received an "enthusiastic reception" from analysts and the press. He could also bask in the company's recent financial results, which showed first-quarter profits and revenue up sharply from a year earlier.

Olsen noted, however, that the Maynard, Mass., company's first-quarter profits were boosted by a nonrecurring tax benefit from a tax law change governing overseas trad-

ing. "We will not see this again next year," he said, but added that the company's performance "will always be measured against" the previous year's results, including the tax credit.

Commenting on whether the powerful 8600 is an effort to go after a piece of IBM's market, Olsen said the answer is "Obviously, no. IBM is eight times bigger than we are. It is mathematically impossible for us to take over IBM," Olsen said. The company's objective, he said, is to prevent IBM from making inroads into DEC's customer base. "IBM has no reason to worry about us. We have a lot of reason to worry about them."

However, Olsen's statements re-

garding IBM seemed at odds with remarks he made a day earlier at the 8600 unveiling. Asked then if the No. 2 computer maker was planning to compete directly with IBM's product line, Olsen replied, "What do you think we have been doing for the past two years?"

Discussing the company's strategy, Olsen said DEC is committed to the concept of clustering VAXs to a common data base as a way of achieving a single, high-performance system. "We believe that clustering gives all the benefits of multiprocessing and more," he said.

Retail market boom

Olsen conceded that the company's personal computers "bombed in the retail market." He attributed that lack of success to retail customers not knowing for what purposes they wanted to use personal computers. He claimed DEC's personal computers have sold well to "our kind of customers."

Olsen asserted that DEC's personal computer line is not dead yet. "We're just starting," he said. "The personal computer is a key part of our strategy."

Olsen defended the company's marketing of its personal computers by downplaying the importance of advertising. "Marketing... always means, first of all, defining the product, defining customers' needs and then matching them," he said. If a product meets those criteria, he added, "with or without Charlie Chaplin or space ships, it will sell."

"We didn't get to \$5.5 billion [in annual revenue] without a little scheming about how we sell," Olsen said. "And if you can sell without looking too obvious, it's better."

Olsen was also asked when he expects the company's operating profit margins to return to their historic double-digit levels. In the fiscal year ended June 30, DEC's operating margin was 6%.

"Our historic attitude has been never to make promises," Olsen said. He said he hopes DEC's new products will help restore the company's past profit levels, but he noted that a "pending economic slowdown" in the U.S. does not bode well for a speedy change in the situation.

DEC officer leaves position

MAYNARD, Mass. — Alfred M. Bertocchi, chief financial officer of Digital Equipment Corp. since 1971, has stepped down from that position, according to an announcement made by company President Kenneth Olsen Nov. 1.

Olsen said Bertocchi had asked to reduce his responsibilities at the company. However, Bertocchi will continue to work for DEC on a consulting basis.

While Bertocchi served in his position, DEC's annual revenues grew from \$140 million to \$5.5 billion. "Bertocchi is one who always had very good sound judgment and wisdom on financial matters," Olsen said.

more powerful high-level thinkers.



COMPUTER INDUSTRY

AEA lauds Wang; cites arts, educational contributions

By David Shinn
Civ Staff

BOSTON — An Wang, who 34 years ago founded a small electronics company that he proceeded to build into a world leader in office automation, was awarded the American Electronic Association's (AEA) 1984 Medal of Achievement last month.

Wang, chairman of the board and chief executive officer of Wang Laboratories, Inc. in Lowell, Mass., accepted the award at the AEA's annual meeting here.

"I accept this honor on behalf of my colleagues at Wang Laboratories who have helped me in my work. This award is, indeed, a tribute to their faith in progress through technology," Wang said in accepting the award.

The medal is the AEA's highest award, presented annually for significant contributions to the advancement of electronics. The medal recognizes overall accomplishment, rather than specific inventions or contributions. Other considerations include service to the community, humanitarian organizations and educational institutions.

Last year's recipient of the medal was John G. Linvill of Stanford University, Stanford, Calif.

Dean O. Morton, AEA chairman and chief operating officer of Hewlett-Packard Co., said Wang was being recognized not only for his technical achievements, but also for "his contributions of both time and financial aid to educational institutions, the community and the arts. Dr. Wang has taken his responsibilities beyond the successful management of his company and into the community."

Wang stressed the need for the U.S. to foster a forward-looking, aggressive educational policy in order to maintain its technological supremacy. "As the leaders of an industry whose continued success depends upon education, we have a vital stake in ensuring that our educational institutions keep pace with high technology's ever-increasing need for highly educated individuals," he said.

At the same time, Wang noted, "We should remember that our fervor for the new technology must be tempered with an abiding respect for our humanistic values and traditions. Accordingly, we must remember the importance of our great cultural institutions and their profound contributions to the quality of life within our communities."

He urged the roomful of top computer industry executives to support cultural activities because "without our commitment, they cannot sustain the artistic and cultural endeavors which bring grace and dignity to our lives."

A graduate of Chiao Tung University in Shanghai and Harvard University in Cambridge, Mass., Wang began his computer manufacturing company in Boston's South End in 1951. In the early 1950s, he invented the magnetic core memory, which for more than two decades was a basic

component of the computer.

Wang Laboratories introduced a desktop computer called Loc 1 in 1964. A forerunner of the company's electronic desk calculator, it had a keyboard resembling that of an adding machine, but offered the user the unique feature of generating logarithms with a single key-stroke.

In fiscal 1984, Wang Laboratories reported net income of \$210 million on revenues of \$2.1 billion.

Intel licenses Fujitsu to produce, market 16-bit microprocessors

SANTA CLARA, Calif. — Intel Corp. last week announced it will grant Fujitsu Ltd. a license to manufacture and market Intel's 80186 and 80286 16-bit microprocessors and the 8051 microcontroller.

According to Intel, the agreement includes the 80186, an 8-bit bus version of the 80188, and the 82284 clock generator and 82285 bus controller support devices for the 80286. The agreement expands the 1981 technology exchange pact between the two companies, in which Fujitsu was granted a second source license for Intel's 8086 and 8088 microprocessors, the 8089 coprocessor and

support devices. The current agreement reportedly provides for the transfer of mask-set information from Intel to Fujitsu. Fujitsu said it plans to have its sample available in mid-1985, with Intel's 8051 available as early as January.

Michael Gumpert, an analyst with Prime Webber, Inc., said the Intel move is in keeping with Intel's plans to provide second sourcing in Europe, Japan and the U.S.

Masamasa Yasufuku, Fujitsu executive director, said the agreement enables Fujitsu to give full support to expansion from a 4-bit to an 8- or 16-bit microprocessor.

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COMPUTER INDUSTRY

Signetics cuts defense firm shipments

By Neilson Burton
Of West Coast Bureau

SUNNYVALE, Calif. — Semiconductor manufacturer Signetics Corp. stopped shipping electronic chips to 25 of its defense contractors early last month, after a voluntary internal audit in mid-September revealed possible testing irregularities in 1,300 types of chips destined for military users.

Signetics, one of the largest military chip suppliers, which sells about \$70 million in chips annually to military contractors, said it voluntarily notified defense contractors of the potential irregularities and said the discrepancies may involve chips shipped since 1981.

Signetics spokesman Ronald Deutsch said the company did not test its semiconductors according to the electrical specifications originally drawn up by its defense contractors. He noted that in most cases, the contractors had verbally approved waivers in the electrical testing requirements for the chips, but had failed to confirm the changes in writing. Signetics' internal audit was prompted by an incident last September at Texas Instruments, Inc., when IBM discovered that TI had not fully tested its military chips, he said.

According to a semiconductor industry analyst who asked not to be identified, the incidents at TI and Signetics underscore a long-standing

practice among Department of Defense (DOD) contractors to use internal testing requirements for chips rather than DOD-approved standards. He said contractors generally create their own testing requirements, called source control drawings, for chips that do not already have formal military testing standards because it sometimes takes as much as a year for DOD engineers to devise formal testing protocols for new chips.

A spokesman for IBM, a major Signetics customer and defense contractor, said it has stopped shipping military equipment using Signetics chips until the irregularities are more clearly identified.

Prime acquires Japan-based distributor

NATICK, Mass. — Prime Computer, Inc. last month announced it has acquired its exclusive Japanese distributor to sell and service Prime systems in Japan.

The company purchased Prime Computer Japan, Inc. from Marc Analysis Research Corp. of Palo Alto, Calif., in a cash transaction. A spokeswoman for the company would not reveal additional financial details.

Prime said the new wholly owned subsidiary, which is headquartered in Tokyo, will focus on marketing its computer-aided design and manufacturing systems and its Prime Information relational data base management programs, both of which have been modified for the Japanese language.

The company also announced the creation of its sixth overseas regional office, the North Pacific Zone Office, in Tokyo. The office will oversee Prime's Japanese subsidiary and its distributorships in Taiwan and South Korea.

Clifford Stratton was named managing director of the subsidiary and general manager of the regional office. Stratton formerly was national marketing manager for Prime Computer of Australia Ltd.

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period one year earlier.

Cipher Data Products, Inc. reported profits for the first quarter ended Sept. 30 of \$3.7 million, or 28 cents per share, compared with \$2.2 million, or 17 cents per share, in the corresponding quarter last year. Revenues were \$38.8 million, compared with \$24.1 million in the same period a year ago.

Integrated Device Technology, Inc. announced that

profits for the second quarter ended Sept. 30 rose to \$1.7 million, or 12 cents per share, compared with a loss of \$555,000, or 6 cents per share, in the comparable period one year ago. Revenues were \$3.6 million, compared with \$2.6 million in the same quarter a year ago.

GTE Corp. reported profits for the third quarter of \$277 million, or \$1.36 per share, compared with \$236 million, or \$1.22 per share, in the same period one year ago. Revenues were \$3.6 billion, compared with \$3.3 billion a year ago.

Applied Data Research, Inc. reported revenues for the three months ended Sept. 30 of \$33.6 million, compared with \$24.8 million in the same quarter one year earlier. Profits were \$2.5 million, or 47 cents per share, compared with \$5.1 million, or 68 cents per share, in the comparable period last year.

Nashua Corp. announced profits for the third quarter ended Sept. 28 of \$3.9 million, or 82 cents per share, compared with \$2.5 million, or 53 cents per share, for the same period a year ago. Revenues were \$14.8 million, compared with \$13.7 million, for the year-earlier period.

Printronic, Inc. reported profits for the second quarter of \$2.8 million, or 61 cents per share, compared with \$1.6 million, or 35 cents per share, in the same quarter last year. Revenues were \$37.4 million, compared with \$36.9 million for the comparable quarter one year earlier.

Computer & Communications Technology Corp. announced revenues for the third quarter ended Sept. 29 of \$31.6 million, compared with \$22.8 million last year. Profits were \$3.2 million, or 41 cents per share, compared with \$1.5 million, or 20 cents per share, in the same period last year.

Communications Satellite Corp. announced profits for the third quarter ended Sept. 30 of \$12.8 million, or 71 cents per share, compared with \$12.7 million, or 71 cents per share, reported for the same period one year earlier. Revenues were \$109.9 million, a decrease of \$4.4 million from the third quarter of 1983.

Mentor Graphics Corp. reported revenues of \$24.2 million for the third quarter ended Sept. 30, compared with \$7.9 million for the same period a year ago. Profits were \$2.3 million, or 17 cents per share, compared with \$410,000, or 5 cents per share, for the same quarter last year.

See DIBBS page 146

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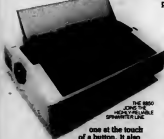
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pared with \$4.4 million, or 10 cents per share, for the year-earlier period.

Computer Associates International, Inc. announced revenues for the second quarter ended Sept. 30 of \$21 million, a 70% increase compared with \$18.2 million for the year-earlier period. Profits were \$2.2 million, or 21 cents per share, compared with \$1.5 million, or 15 cents per share, for the same period a year ago.

AGS Computers, Inc. announced revenues for the third quarter ended Sept. 30 of \$66.1 million, compared with \$36.7 million in the comparable period a year earlier. Profits were \$1.7 million, or 24 cents per share, compared with \$1.5 million, or 24 cents per share, in the same quarter last year.

Banastek Corp. reported revenues for the first quarter ended Sept. 30 were \$10.7 million, compared with \$9.4 million for the corresponding period last year. Profits were \$92,000, or 3 cents per share, compared with a loss of \$715,000, or \$1 cents per share, in the same quarter one year ago.

Daley Systems Corp. announced that revenues for the fourth quarter ended Sept. 30 were \$21.8 million, compared with \$7.5 million in the corresponding period one year earlier. Profits were \$3.3 million, or 22 cents per share, compared with \$1.7 million, or 11 cents per share, in the same period one year ago.

Quantum Corp. reported revenues for the second quarter ended Sept. 29 were \$30 million, compared with

\$15.1 million for the same quarter a year earlier. Profits were \$4.5 million, or 40 cents per share, compared with \$3.4 million, or 36 cents per share, in the corresponding period a year ago.

CompuGraphic Corp. reported revenues for the third quarter ended Sept. 29 of \$101.3 million, compared with \$81 million in the comparable quarter one year earlier. Profits were \$6.5 million, or 79 cents per share, compared with \$4.7 million, or 57 cents per share, in the previous year's quarter.

Information General Corp. announced revenues for the third quarter of \$53.5 million, compared with \$45.7 million in the same period one year earlier. Profits were \$1 million, or 19 cents per share, compared with

\$2.3 million, or 42 cents per share, for the corresponding quarter a year ago.

Compuq Computer Corp. reported revenues for the third quarter ended Sept. 30 were \$27.5 million, compared with \$26 million in the same quarter one year earlier. Profits were \$1.8 million, or 7 cents per share, compared with \$882,000, or 5 cents per share, in the corresponding period one year ago.

Seeg Technology, Inc. announced profits for the fourth quarter ended Sept. 30 were \$1.4 million, or 11 cents per share, compared with a net loss of \$4.5 million, or \$3.08 per share, in the like period last year. Revenues were \$15.1 million, compared with \$ 3.6 million in the same quarter one year earlier.

STC

from page 135

Fujitsu are really starting to come on stream," and are ready to jump in with the newer technology. The Japanese companies, he predicted, will each ship more disk drives next year than the entire domestic plug-compatible manufacturers were "hoping to ship this year."

Sharply limited focus

Most analysts believe STC might still salvage something, but that something will be a sharply reduced and limited focus, as opposed to the optimistic goals of simultaneously competing with high-end disk drives, developing optical storage and putting out a Cmos-based mainframe.

"I would not expect STC to fail," said James Porter, president of Disk/Trend, Inc., a Los Alamos, Calif., market research firm. "I would expect it to have to shrink back somewhat to conserve cash and maybe to defer some of its newer programs."

Porter said STC is still delivering 3300 equipment drives and large quantities of tape drives, "so they have an excellent ongoing business."

He said STC's biggest in-house development program is the optical disk drive. Deliveries of that product reportedly are not scheduled until first quarter 1985. The other new program is STC's version of a tape drive to use IBM's 18-track tape drive program. If financing for these development programs is cut back as part of the reorganization, the company's long-term future may be grim indeed.

Most analysts seem to be waiting to see whether some other company — the Japanese and other U.S. computer companies are most often mentioned — will seek to acquire parts or the whole of STC. From, however, took a dim view of this alternative, wondering who would want to get into a business that looks so frail. Thomas Crotty of the Gartner Group, however, noted that STC has an established sales and support base, along with clean, modern manufacturing facilities.

The question the user community must face is whether any domestic company can survive IBM's massive power. STC, Memorex and CDC had yet to achieve full speed in manufacturing and distribution of IBM's 3380; yet IBM is widely believed to be preparing the announcement of two enhanced models. By the time any company could counter that, Big Blue would probably be ready with yet another step forward.

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Henry Oberst
wanted a challenge...

We found it for him.

Henry Oberst had been in the data processing field for a number of years before he first came to us. His education was most impressive. His EDP experience was extensive, to say the least. The problem was that, over the years, Henry had provided solutions to dozens of various challenges. He was, as a result, becoming bored with his work.

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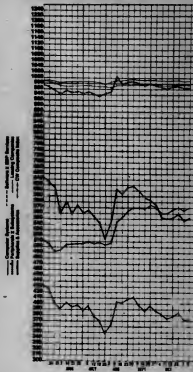
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Computerworld Stock Trading Index



Computerworld Stock Trading Summary

All statistics compiled

computer and formatted

by

TRADE QUEST, INC.

Cambridge, Mass. 02139

CLASSIFIED STOCK SUMMARY, NOVEMBER 7, 1984

STOCK	1980-81	1981-82	1982-83	1983-84	1984-85
1. ALTRON CORPORATION	100	100	100	100	100
2. AMERICAN COMPUTER	100	100	100	100	100
3. AMERICAN DATA	100	100	100	100	100
4. AMERICAN ELECTRONICS	100	100	100	100	100
5. AMERICAN ELECTRONICS	100	100	100	100	100
6. AMERICAN ELECTRONICS	100	100	100	100	100
7. AMERICAN ELECTRONICS	100	100	100	100	100
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99. AMERICAN ELECTRONICS	100	100	100	100	100
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